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Number 3.

MARCH, 1902.

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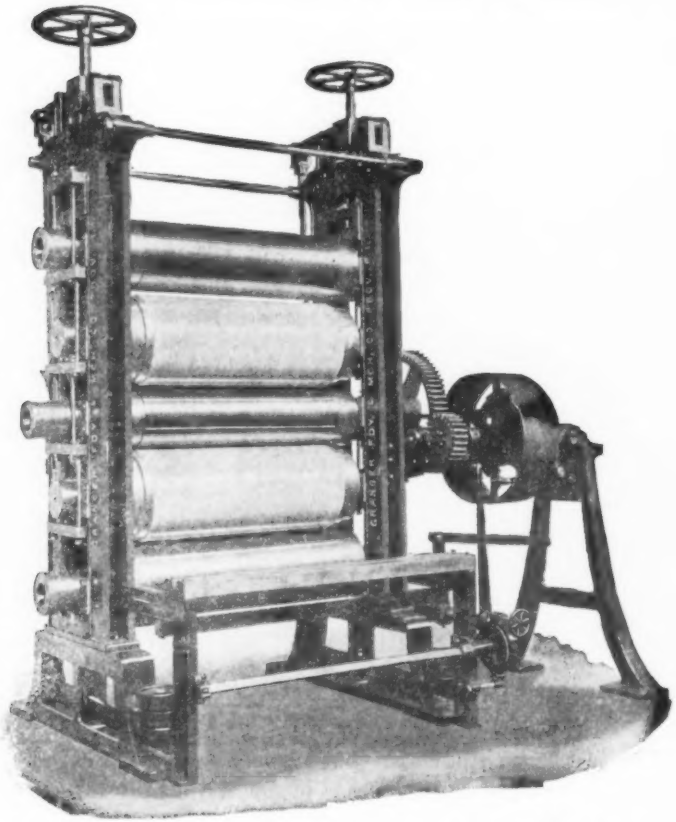
95 SOUTH STREET,
BOSTON, MASS.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

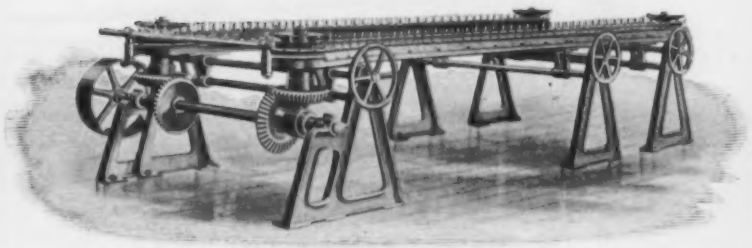
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



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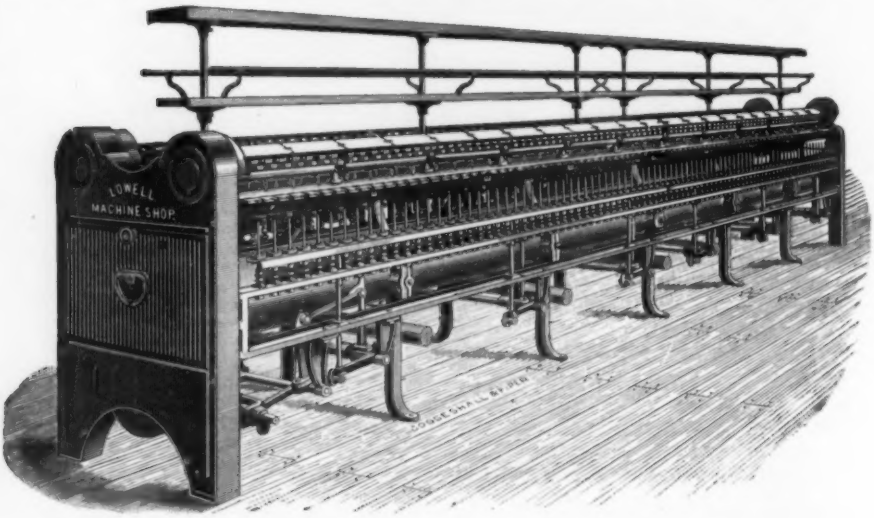
PHILADELPHIA, PA.

LOWELL MACHINE SHOP,

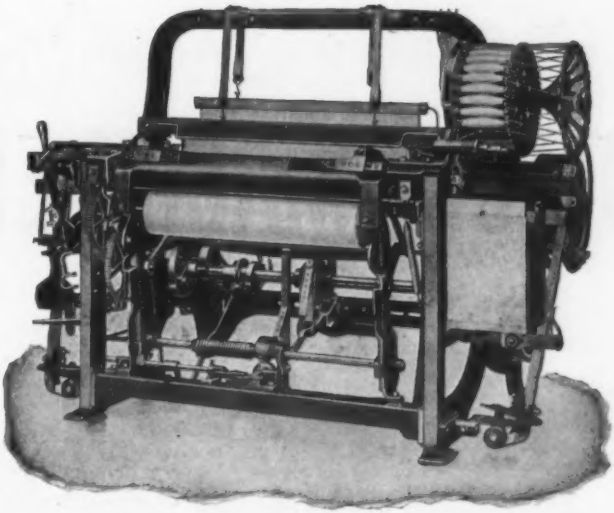
Lowell, Mass.,

COTTON MACHINERY.



Revolving Flat Cards,
Railway Heads,
Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
Looms.

WORSTED MACHINERY.



OUR LATEST

NORTHROP LOOM

Although our order list lengthens and strengthens, we do not adopt the simple and inexpensive plan of building without change, but continually add improvements whenever possible. A careful study of the above illustration will prove of interest to adepts in the Art of Weaving.

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MASON MACHINE WORKS,

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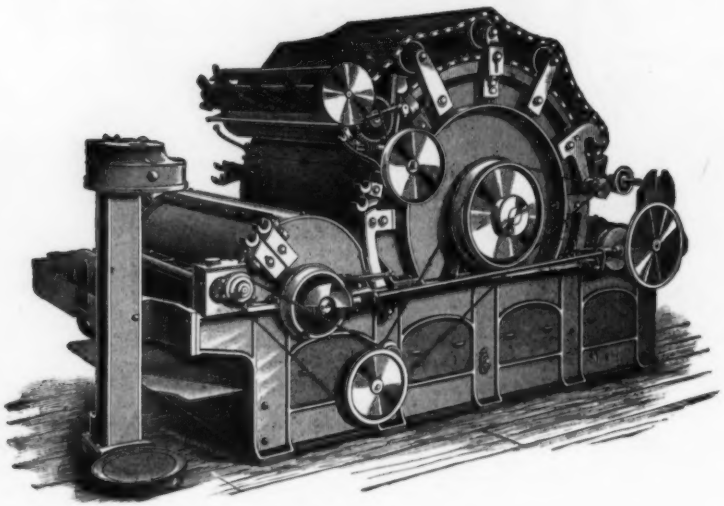

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INCLUDING THE

Mason-Northrop Loom.

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SELF-FEEDING OPENERS
BREAKER LAPPERS
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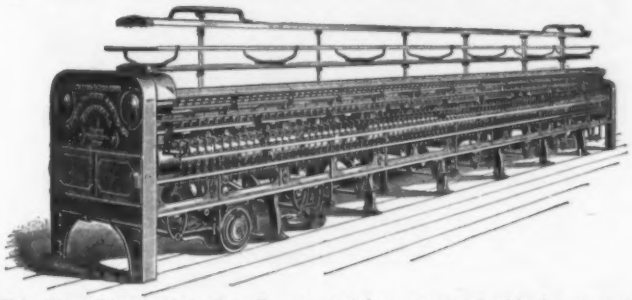
DRAWING FRAMES With Mechanical or Electric Stop-Motion.
SLUBBING FRAMES
INTERMEDIATE FRAMES
ROVING FRAMES

Improved New Pattern Spinning Frames.



This New Pattern Spinning Frame contains many valuable improvements which will certainly interest you and pay you to investigate. All parts are specially designed and so constructed as to obtain the highest speed and greatest production.

We Invite Investigation and Comparison.

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Revolving Flat Carding Engines.

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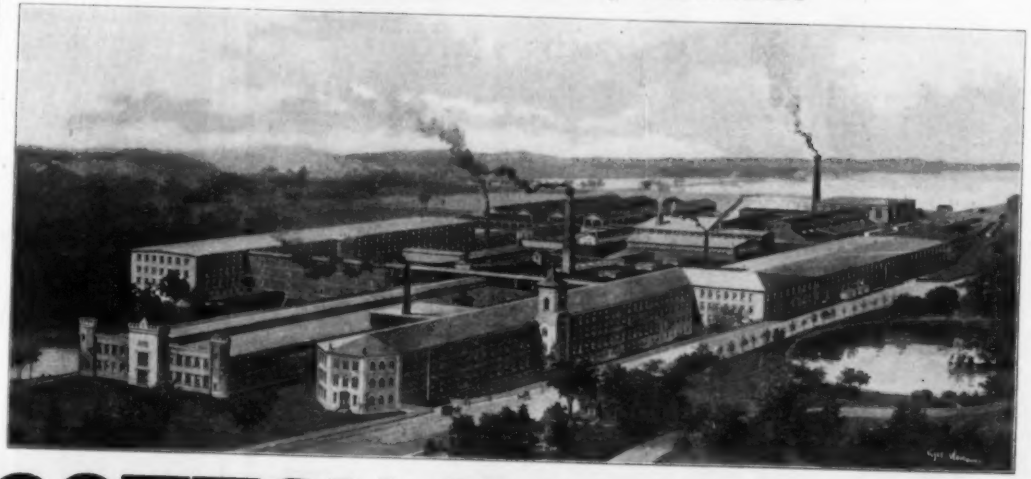
Ribbon Lap Machines.

Combers.

Railway Heads.

Drawing Frames.



Spinning Frames.

Spoolers

Twisters.

Reels.

Long Chain Quilling Machines.

Looms.

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In the Cotton Field nothing equals the
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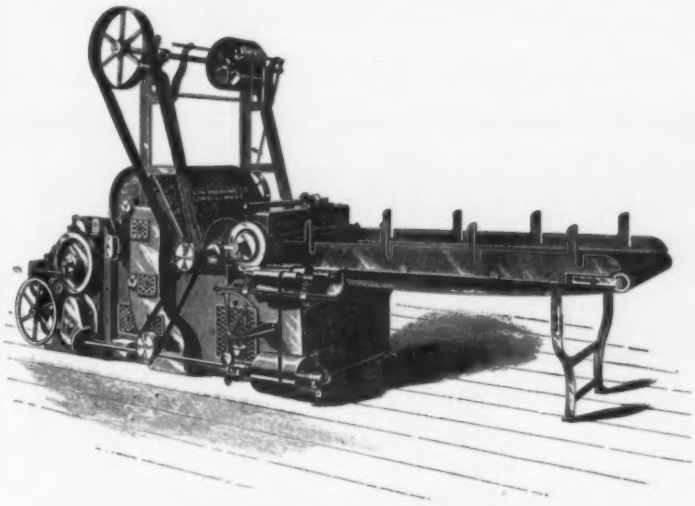

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Used for Spooling or Winding Cotton Yarns of all kinds.

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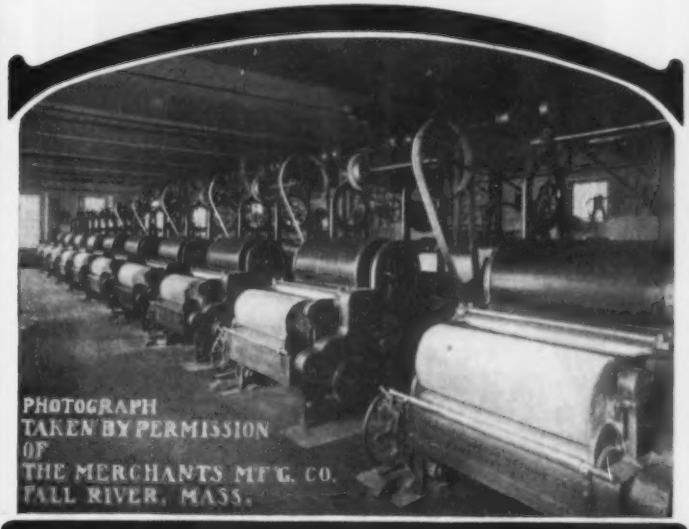
SO IN MANUFACTURING COTTON, THE PREPARATORY MACHINERY IS ALL IMPORTANT TO THE FINISHED PRODUCT.



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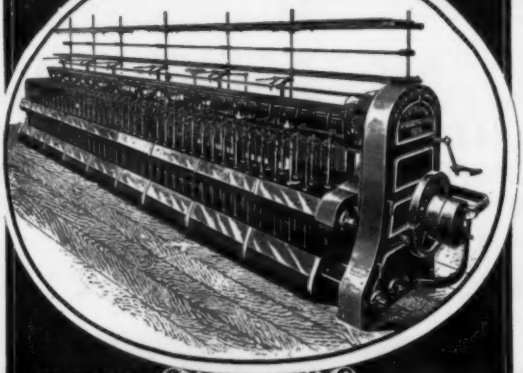

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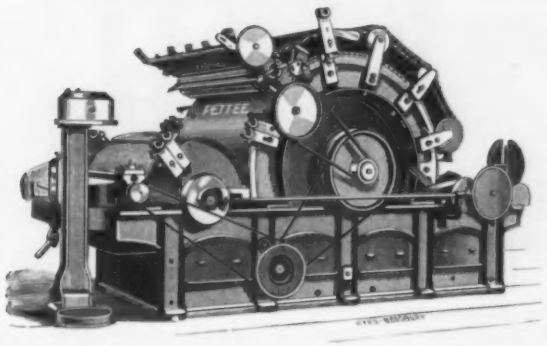

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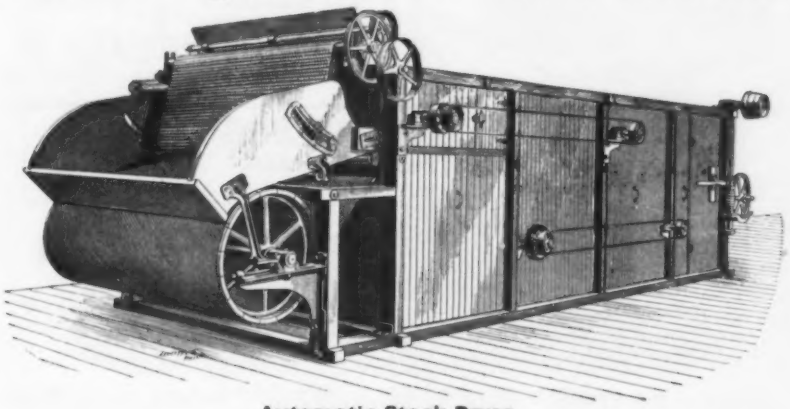

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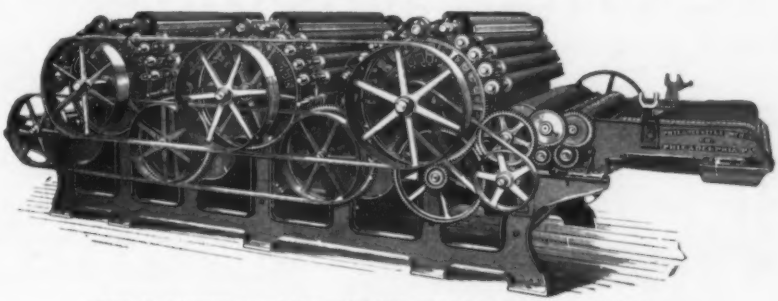

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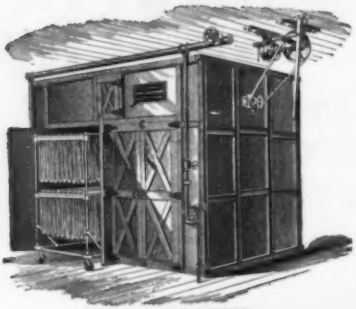

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WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, &c.

CARBONIZERS,

Yarn Scouring Machines.

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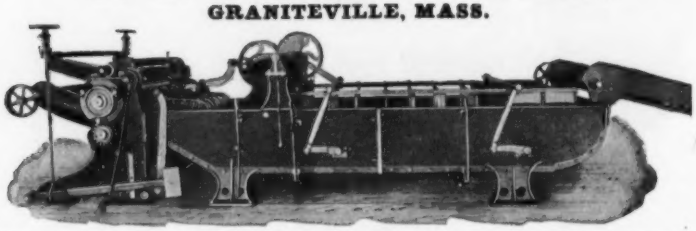

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BUILDERS OF

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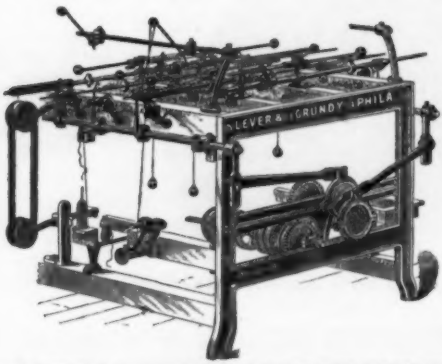

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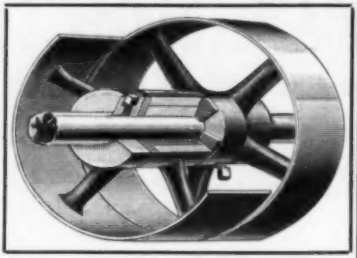

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but you stand the nuisance of oil, in order to lessen friction—and so you get *both*.

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They're unequalled for loose pulleys and light shafting.

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You get your money's worth and in time you

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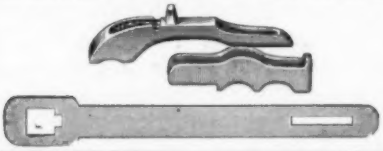
Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups



The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

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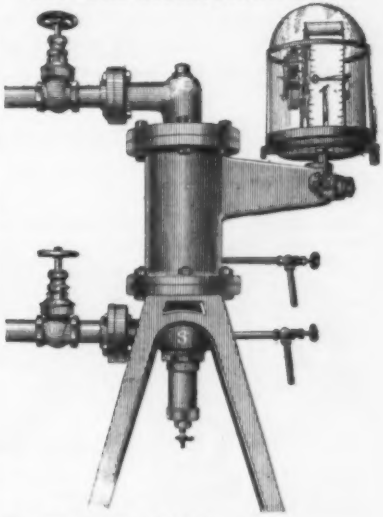

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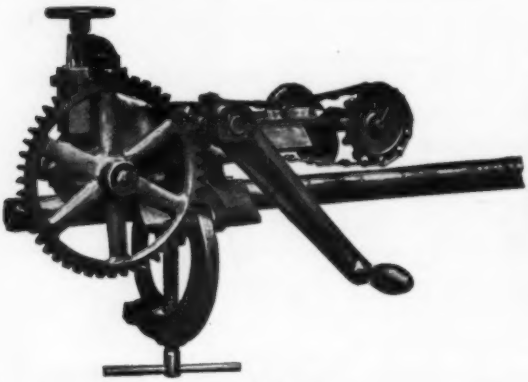

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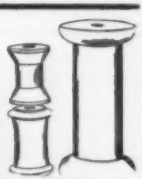

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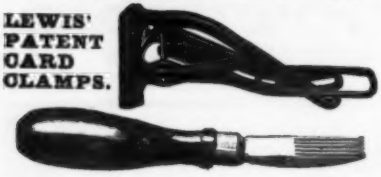
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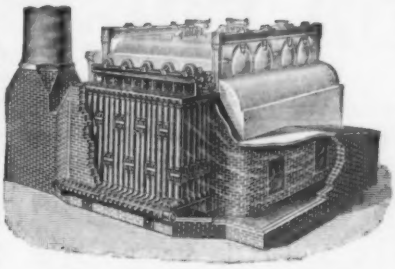

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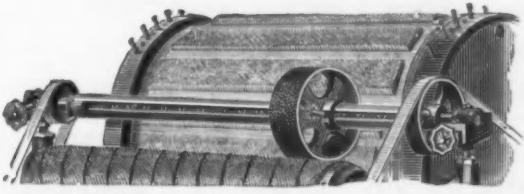

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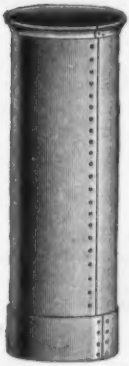

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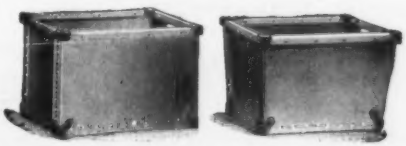

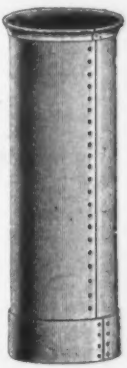

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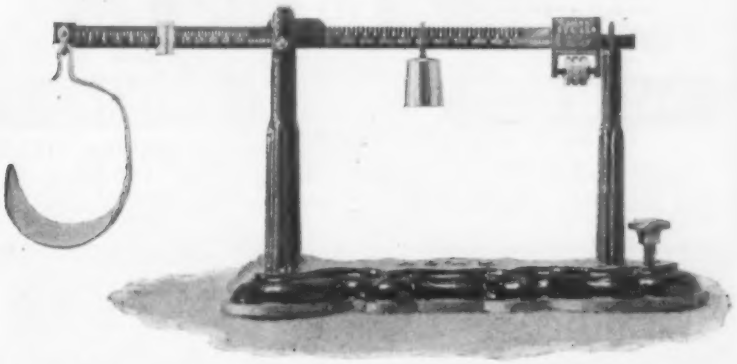

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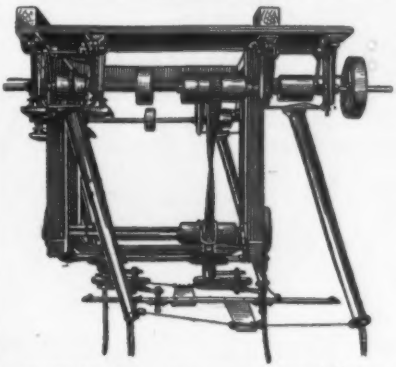

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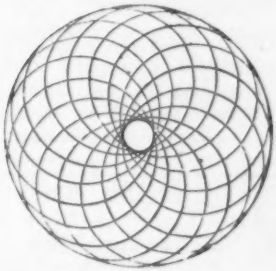

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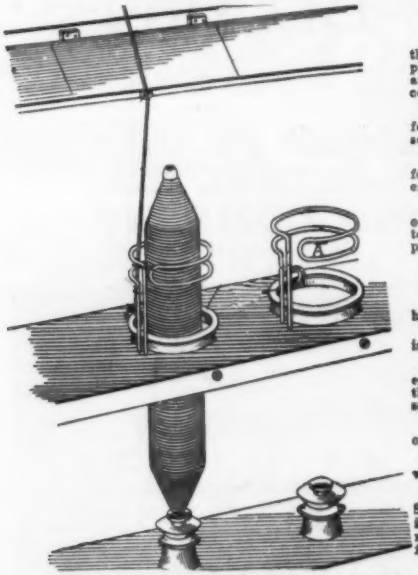
New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse,

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y. in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

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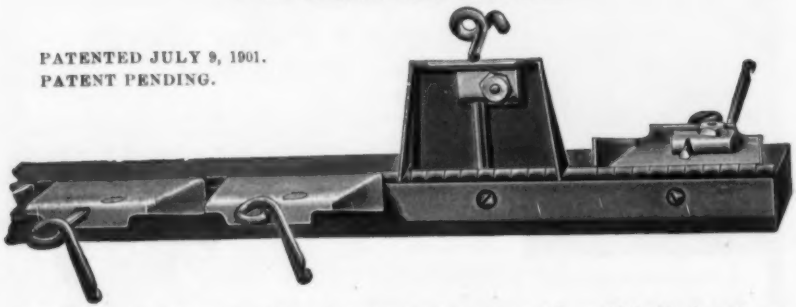
HOUGHTON'S
All Steel Thread Board
WITH
Hardened Thread Guides.
7 1-2 CENTS PER SPINDLE.

PATENTED JULY 9, 1901.
PATENT PENDING.



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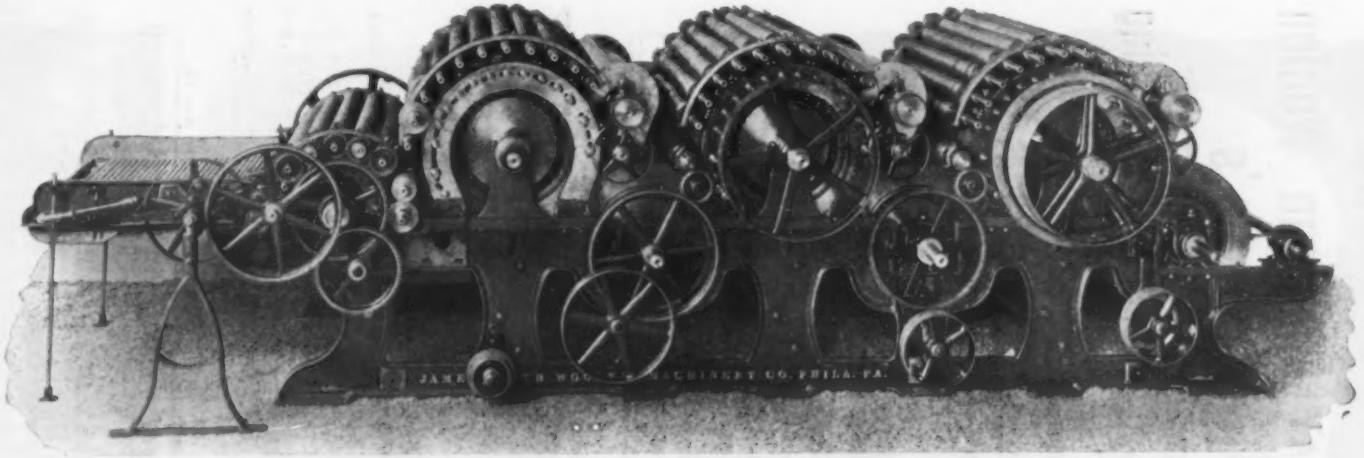

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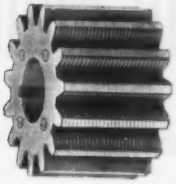

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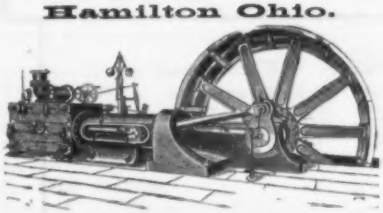

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Textile Patents.

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Apparatus for Steaming Fabrics. 692,171. Thomas Walsh, Lowell, Mass.

Apparatus for Dyeing. 693,446. James A. Sackville, Pendleton, Manchester, England.

Bleaching Kier. 692,091. John C. Tyms, Garfield, N. J.

Calendering Machine. 691,923. Myron J. Whitlock, Ansonia, Conn.

Card Clothing. 691,916. Louis C. Schneider, Mittewida, Germany.

Card Clothing. 693,817. Charles Mills and Robert W. Hunton, Newton, Mass., assignors to the Saco & Pettee Machine Shops, Newton, Mass., a corporation of Massachusetts.

Cop Building Mechanism for Spinning and Doubling Machinery. 691,991. Thomas Watson, Bridge of Weir, Scotland, assignor to E. S. Coats, Paisley, Scotland.

Drier for Cotton and other Materials. 693,455. John C. W. Stanley, London, England.

Dyeing Apparatus. 693,443. John Rhodes, Bradford, England.

Electric Filling-changing Mechanism for Looms. 692,931. H. W. Smith, Worcester, Mass.

Electric Circuit Closer for Looms. 692,924. H. W. Smith, Worcester, Mass.

Fastening for Hoop-Irons with which Bales Containing Wool or other Soft Produce are Secured. 691,915. Geo. R. Robertson, Sydney, New South Wales.

Fabric. 692,029. Joseph Phillips, Hyacinthe Lebel, and Raoul Grimoin Sanson, Paris, France.

Fabric. 692,467. Joseph Mugnier, Lyons, France.

Flax Treating Machine. 692,936. John T. Smith, Huron Lake, Minn.

Filling-Supplying Loom. 693,558. Alida M. Marcoux, Milford, Mass., assignor to Draper Co., Portland, Me., and Hopedale, Mass.

Knitting Machine. 691,888. Charles J. Appleton, Long Island City, N. Y., assignor by mesne assignments to John J. Shaw trustee, Mamaroneck, N. Y.

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Loom Jacquard Mechanism. 693,540. R. Chwalla, Vienna, Austria-Hungary.

Loom Picker Motion. 693,592. D. Durkin, Manville, R. I.

Loom Shuttle Box-operating Mechanism. 693,681. Henry Bardsley, Providence, R. I., assignor to Crompton & Knowles Loom Works, Providence, R. I.

Loom Weft-Fork Clearer. 693,501. David W. Denny, Warrensville, S. C., assignor to Draper Co.,, Hopedale, Mass.

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Loom Shuttle Tension Device. 693,164. Howard K. Leitz and Chas. H. Hannigan, Glenrock, Pa.

Loom Weft Replenishing Mechanism. 692,933. H. W. Smith, Worcester, Mass.

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Machine for Handling Lint Cotton. 691,865. Peter Kolb, Fort Deposit, Ala.

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(Continued on page 533.)

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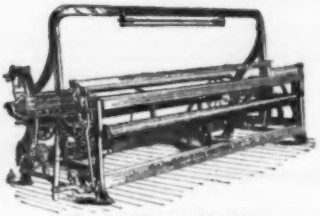

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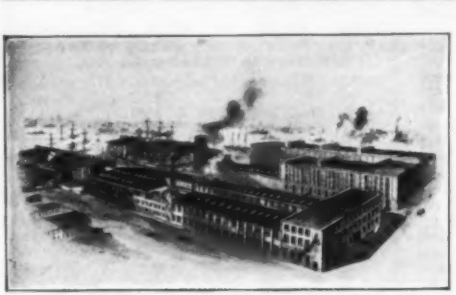

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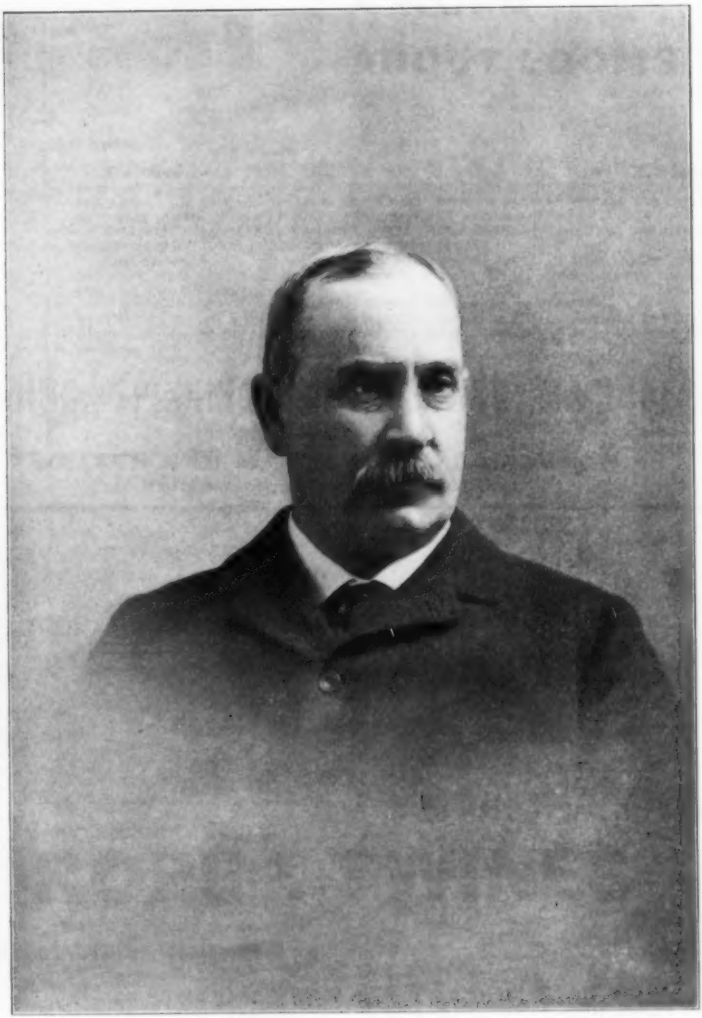

ALVAH W. SULLOWAY.

TEXTILE WORLD.

Vol. XXII. MARCH, 1902. No. 3.

ALVAH W. SULLOWAY.

The subject of this sketch, one of the best known business men of New Hampshire, was born in Framingham, Mass., on Christmas day, in the year 1838. He is the only son and eldest child of Israel W. and Adeline (Richardson) Sulloway, to whom three daughters were born. His father was a native of Salem, N. H., and sprung from revolutionary ancestry on both sides of his house. He began work in textile mills at an early age, and was for some time overseer in the Saxonville Woolen Mills.

When Alvah was about ten years of age, his family removed to the town of Enfield, N. H., where his father engaged in the manufacture of yarn and hosiery, introducing the process of manufacturing the celebrated Shaker socks by machinery.

In his father's mill at Enfield, Alvah gained a practical knowledge of the business. He secured a good academical education at Canaan, N. H., Barre, Vt., and the Green Mountain Liberal Institute at South Woodstock, but a considerable portion of his time between the ages of ten and twenty-one was spent in mill work. He engaged in business for himself as soon as he became of age, forming a partnership with Walter Aiken of Franklin, for the manufacture of hosiery. This business connection continued for four years, when a new firm, consisting of Mr. Sulloway and Frank H. Daniell of Franklin, was formed under the name of Sulloway & Daniell for operating a new mill. In 1869, Mr. Daniell withdrew, and until January, 1888, Mr. Sulloway was sole proprietor.

The mill contained in 1869 four sets of cards, but in 1887, an addition was built and four more sets were added. The following year, the business was incorporated, taking the name of Sulloway Mills, with a capital of $100,000. In 1897, another addition was built for the manufacture of full-fashioned hosiery and the capital increased to $250,000.

The mills are of brick and are situated on the lower power of the Winnipiseogee river, opposite the mills of the International Paper Co. Mr. Sulloway was among the first to engage in the manufacture of full-fashioned hosiery in this country after the passage of the Dingley Tariff Bill in 1897. The mills employ about five hundred hands and make about 1100 dozens of cotton and wool full-fashioned and seamless hosiery daily.

Mr. Sulloway has been actively identified with the Mayo Machine Co., since 1888, and practically organized the Mayo Knitting Machine & Needle Co., in 1896, of which he was an active director until January, 1902, when the company elected him president. He is interested in many other enterprises and was one of the organizers of the Franklin National Bank in 1879, was elected its first president and has ever since held that position; he was also one of the organizers of the Franklin Savings Bank, of which he has ever since been one of the trustees and for a long time one of the committee of investment; he has been a director of

the Boston & Maine Railroad since 1890; president of the Northern (N. H.) Railroad since 1885; he is also president of the Concord & Claremont Railroad; president of the Peterboro & Hillsboro Railroad; president of the Franklin Light & Power Co.; director in the Androscoggin Pulp Co., of Portland, Me., and director of the Concord Street Railway.

tee from 1876 to 1896, when he resigned and retired from politics.

Mr. Sulloway has found the scarcity of Democratic votes in New Hampshire to be somewhat of a handicap in politics, but his popularity among the people, Republican as well as Democratic, has been frequently demonstrated. In 1874, he was nominated railroad commissioner

THE SULLOWAY MILLS, FRANKLIN FALLS, N. H.

In spite of his varied business interests, he has found time to devote to politics. He was a member of the New Hampshire House of Representatives in 1871, 1872, 1874 and 1875; a member of the State Senate in 1891, a delegate to the New Hampshire Constitutional Convention in 1876 and 1889, has been a member of the Franklin City Government since Franklin became a city, a delegate to every Democratic National Convention from 1872 to 1896 and a member of the Democratic National Committee

of New Hampshire on the Democratic ticket, and although there was no choice by the people, the Democracy won a substantial victory, securing a majority in the legislature, which chose their candidates for governor and railroad commissioner. The energetic labors of Mr. Sulloway during this campaign contributed in a large degree to this success.

In 1877, Mr. Sulloway was nominated for Congress, and although he was opposed by a large Republican majority and a very popular candi-

date, ran largely ahead of his ticket.

His good business judgment is so generally recognized that he has been frequently called upon to serve as appraiser of valuable mill properties. His judgment has been broadened by trips abroad, where he visited Nottingham, England, and Chemnitz, Germany, and other European knitting centres.

In 1866, Mr. Sulloway was married to Miss Susan K. Daniell, daughter of Jeremiah F. Daniell of Franklin. They have three children, two sons and one daughter. Mr. Sulloway has been in business for forty-one years, but is still in his prime, well and rugged, and looks younger than he is, has the same energy that he showed in the beginning of his business career, and will undoubtedly be heard from in the future.

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CLOTHING IN COLD CLIMATES.

Protection against the cold was secured to the prehistoric man living in the temperate and arctic regions by the use of skins and furs of animals. All of these materials that can be secured at the present time find a ready use for the same purpose, and in the extreme northern latitudes provide the only covering that will protect man from the rigors of that climate.

The inhabitants of the tropics near the sea level, on the other hand, find such clothing unnecessary as a protection against the cold. Cotton, linen and other vegetable fibres provide the covering required to hide nakedness, for ornament or to guard against the inequalities of temperature and moisture.

In the colder climates the scarcity of furs and skins and the difficulty of securing them doubtless proved a hardship to man from the beginning of his life on this planet. An animal furnished but one skin, and had to be killed for that.

The necessity for an additional supply of clothing was the mother of invention of the processes of carding, spinning, weaving and knitting the hairy covering of animals into covering for the body. It is a matter of regret that no account of this early revolution in the clothing industry has been handed down to us. Human nature then was probably much the same as now, and we can readily imagine the strenuous objections raised by the dealers in hides and skins to the new methods by which one animal was used over and over again to supply cheap and inferior clothing for the people. They doubtless argued that their goods, skins and furs, were much warmer and vastly more durable than the woven and knitted substitutes by which the people were cheated and the price of skins reduced. Their objections were unavailing, as the new methods of textile manufacturing by hand were well established at the dawn of history and continued with but slight modifications down to the time, a little over one hundred years ago, when the invention of the Hargreaves' jenny, the Arkwright spinning frame and the steam engine marked another epoch in textile manufacturing.

To be useful to man, yarn must be woven as well as spun. Machine spinning and hand weaving, however, formed a chain whose strength was measured by its weakest link, viz., the hand loom, and the improvements effected by Hargreaves and Arkwright would have been of but comparatively slight benefit to mankind without the power loom, which was invented soon after by Cartwright.

The benefits resulting from these improvements in spinning and weaving cloth cannot be overestimated. They increased the production and reduced the cost of one of the great necessaries of life, clothing, and made it possible for a small fraction of the human family to clothe the rest, who were thus left free to devote their energies to other fields of human endeavor in industry, science and the arts. It is very fitting that posterity should erect monuments to Hargreaves, Arkwright and Cartwright.

But a new difficulty now presented itself. The immense quantities of cloth that could be produced by the new spinning and weaving machines called for a corresponding increase in the supply of raw material. The power loom was needed to realize the advantage of the power spinning machines, and now the full benefits of both were threatened by a scarcity of raw material. The cotton fields of our own Southern States solved this world-wide problem as regards the principal supply of clothing for the inhabitants of the tropics and an important part of the clothing for the rest of mankind.

A great deficiency still existed. It was not in the heat of the tropics, but in the chill atmosphere of the temperate zones that man was at his best. The cold of these regions acted as a stimulant to both mind and body, but at the same time warm clothing for the body was essential. He must have wool, and, to keep pace with the development that spinning and weaving made possible, he must have plenty of it. Nature was not so generous with wool as with cotton. The raising of sheep was, as it still is, slow and precarious. The supply of wool was insufficient for the necessities of mankind.

At this juncture some one, we are not certain who, perhaps more than one deserves the honor, discovered that woolen cloth could be converted into wool and used again for producing a new supply of clothing, which could again be converted into wool, and the process repeated indefinitely. The honor of this discovery is claimed for three persons, Benjamin Parr, Benjamin Law and a Hebrew clothing dealer of London. Whoever he may be, he should be numbered among the great benefactors of the human race

for having discovered a means of cheaply and suitably clothing men in those portions of the earth most favorable for the development of the race.

The disproportion of the world's wool supply to the needs of mankind is shown by a comparison of the yearly production of clean wool with the population of the earth. The statistics for both can at best be but approximate. Any probable error would not, however, materially effect the per capita portion.

In a German work, Wollproduction und Wollhandel, recently published by Dr. W. Senkel, statistics of the clean weight of wool produced in the various countries are given, from which we estimate the yearly production of clean wool throughout the world at 1,379,000,000 pounds.

The population of the earth is estimated at 1,440,000,000, but of this number, the people, estimated at 271,000,000, living within an equatorial belt extending around the earth and bounded on the north by the Tropic of Cancer and on the south by the Tropic of Capricorn, may be omitted from any calculation as to the consumption of wool. Many of them wear no clothing whatever. The rest find clothing made from vegetable fibres to answer every requirement. Eliminating this portion of the earth's population, we find 1,169,000,000 inhabiting the regions north and south of this torrid belt who require woolen clothing to protect their bodies from the cold. Dividing among this number the wool grown each year, we find each person's share to be 18 87/100 ounces of clean wool.

A large portion of this weight is lost in the processes of manufacturing the wool into cloth. This shrinkage is greater in making worsted than in making what is termed carded woolen cloth, but would average 30 per cent. The 18 87/100 ounces of clean wool allotted to each person would, consequently, produce but 13 2/10 ounces of woolen cloth. This weight of cloth would be equal to a piece of men's wear winter weight goods 35 inches square, or to a piece of summer weight cloth 44 inches square. This insignificant patch is the yearly portion for each person, if all the wool grown on sheep were manufactured into cloth. A man's suit requires 3½ times as much cloth as the larger and 5½ times as much as the smaller piece. This yearly production of woolen cloth per capita would scarcely cover an infant. Without an additional supply of woolen material, man would be forced to clothe himself in cotton fabrics or in skins as in prehistoric times; otherwise, a great part of the population would be taken from their present occupations to raise wool with which to clothe the rest.

It is from such alternatives as these that extracted wool and wool waste save the human race. The processes of reclaiming manufactured wool have made the inventions of Hargreaves and Cartwright available and given a great impetus to civilization. These facts are not generally recognized. Instead of looking upon reclaimed wool as an unmixed good, it is the general custom to regard it as a swindle. The word "shoddy" applied to an important part of reclaimed wool has come to designate anything cheap and worthless. This popular error should be corrected. The people should know the truth about wool, and should understand that if wool is used but once for clothing the greater and best part of mankind would be reduced to untold suffering, and the progress of civilization arrested. As a means of correcting this popular error, and to pay a fitting tribute to one of the great benefactors of the human race, a monument should be erected to the memory of him, whoever he may be, who discovered a means of using wool more than once for clothing.

—Gravity is but the bark of the tree of knowledge, yet it protects it.—Confucius.

ROBERT MIDDLETON.

The death of this well-known manufacturer occurred on Monday, February 24, at his home in Utica, N. Y. He was one of our most successful woolen manufacturers, and was the first man to demonstrate that woolens and worsteds as good as any made in the world could be manufactured in this country.

He was born in Aberdeen, Scotland, May 17, 1825. His father came to this country in 1840, and settled at Middle Granville, Washington County, N. Y., where Robert obtained his education in the common school. At the age of eighteen, Robert went to work for the Lowell Carpet Company, where he remained six years. The next seven years were spent in the service of the Merrimac Woolen Company as assistant superintendent.

Mr. Middleton took charge of the Globe Mills, Utica, N. Y., as agent and superintendent, May 10, 1857, when these mills were in poor shape financially and physically. Under his management, the business prospered, and the Globe goods attained a leading rank in the market. In 1871, the mills were entirely destroyed by fire, but within sixteen months from that date a new plant had been built and put in operation. The new mill was equipped with the best machinery that could be purchased, and the prosperity temporarily interrupted by the fire has continued ever since, and today the name—Globe—is a synonym for the best in woolen and worsted cloth. Mr. Middleton was of a retiring disposition, a hard worker and a man of excellent judgment and unblemished character.

—The exports of textile goods from the Bradford district to the United States for 1901 show a marked decrease, amounting to $2,312,730, or over 28 per cent. as compared with 1900. Following are the figures for each of the two years mentioned, and for 1896 and 1897. The Wilson bill was in force during 1896 and a part of 1897.

1896	$14,058,195
1897	25,142 335
1900	8,055,720
1901	5 742,990

COTTON MANUFACTURING IN THE UNITED STATES.

Every American may well be proud of the remarkable development of cotton manufacturing in the United States during the past two decades. Twenty years ago our cotton mills consumed 1,694,000 bales of cotton. Now they are using cotton at the rate of 3,435,000 bales per year, an increase of 1,741,000 bales or 102 per cent. in the twenty years.

Seventy-seven per cent. of this increase, or 1,339,000 bales, is credited to our Southern mills. Twenty years ago the Southern cotton factories were using a beggardly 187,000 bales of cotton per year. Today this amount has grown to 1,526,000 bales. This is an increase of 715 per cent. for the Southern mills, while the mills in the rest of the country show an increase of but 26⅔ per cent., as compared with their cotton consumption of twenty years ago.

This method of comparison by percentages is, however, misleading, and fails to convey a clear idea of the lines on which the development of the cotton industry in this country, since 1880, has taken place.

Two decades ago the South was slowly recovering from the effects of the war. Since then her people have made a small beginning in developing the immense natural resources of that great section.

Her people had been left poor by the war. Her white population, young and old, male and female, poured into the cotton mills that sprang up like mushrooms, and eagerly worked long hours for low wages, that seemed, however, to them to be the income of affluence.

The work of these untrained operators was necessarily confined to the production of the cheaper grade of goods made of coarse yarn.

This fact is clearly shown by comparing the growth of cotton manufacturing in the South with that in the rest of the country, where the industry is older and where the operatives of 1880 had already become skilled by generations of experience in the manufacture of fine goods.

Taking the past decade for illustration, as we have for this period statistics of spindles as well as cotton consumed North and South, we find that in 1891 the Southern spindles, numbering 1,740,000, were using 550,000 bales of cotton each year, or 158 lbs. per spindle, while the Northern spindles, numbering 12,900,000, were disposing of 1,701,000 bales of cotton, or but 65.8 lbs. per spindle, which was but 42 per cent, of the average weight of cotton required for each Southern spindle.

At the present time, ten years later, we find that the Northern spindles, numbering 14,700,000, are disposing of 1,909,000 bales of cotton per year, or 64.9 lbs. per spindle, slightly less than the per spindle consumption ten years ago, while the Southern spindles, numbering 5,500,000, are now twisting cotton into yarn at the rate of 1,526,000 bales each year, or 138.7 lbs. per spindle, also a reduction in consumption per spindle, indicating a tendency toward the production of finer yarn in the South, as well as the North.

It is also interesting to compare the number and production of spindles added in each section during the past 10 years. The South gained 3,760,000 spindles, with a resulting increase in cotton consumed of 976,000 bales. The North in the same time gained 1,800,000 spindles, with a consequent increase of cotton consumption of but 208,000 bales per year. Each of the new spindles installed in the South during the past ten years thus has a cotton-consuming power per year of 116 lbs., while the Northern spindles installed in the same period show a consuming power per spindle of 57.7 lbs. per year.

This shows clearly the increasing fineness of the yarn spun in each section, but in a more marked degree in the case of the newer manufacturing section.

At the present time it requires 7 7/10 spindles in Northern cotton mills to dispose of a bale of cotton in twelve months, while the same sized bale is converted into yarn in the same time by but 3 6/10 Southern spindles. This difference in consuming power is due to the larger size of the yarn spun in the cotton mills of the newly-awakened South.

The increase in the value of a bale of cotton spun into fine yarn is much greater than when it is spun into coarse yarn. More money is expended for labor and consequently more people are supported by the work on one bale in the one case than in the other.

Thus we see that the bald statement, although strictly accurate, that the Southern mills show in twenty years an increase of 715 per cent. in the amount of cotton consumed, while the Northern mills show an increase of but 26⅔ per cent., in the same time, fails to convey a correct idea of the comparative progress made in this great industry in the two sections of our country. It savors too much of the statement by the fifteen-year-old lad that in less than fifteen years he had grown from 21 inches to 63 inches in height, an increase of 200 per cent., while, according to the best information attainable, his father during that time had not grown at all.

The future development of cotton manufacturing in this country is not likely to proceed on the same lines as in the past. The abnormal conditions of the past twenty years have been greatly modified. Already there are unmistakable signs that the South has about all the coarse cotton yarn

mills that are needed. The signs are none the less plain that the surplus labor supply that Southern mills have had to draw upon is gradually becoming exhausted.

Conditions are becoming more nearly balanced. The great inequalities of the past are disappearing. The sectional lines in cotton manufacturing are fading away.

Soon the rivalry, as well as the sense of common interest, will be the same between the mills of Charlotte, N. C., and those of Fall River, Mass., as they are now between the mills of Lawrence, Mass., and those of Manchester, N. H. Each forms a part of the industry of the common country, protected by the same tariff and with the same markets in which to dispose of their products.

Already the productive capacity of all our mills is in excess of the needs of our own people. The great problem that confronts both Northern and Southern cotton mills is where to dispose of their goods. This will solidify the industry, and our manufacturers will find the imaginary differences between Northern and Southern cotton interests displaced by the contest with the English, German, French, Russian, Japanese and Chinese manufacturers for the control of the markets of the world.

A Yellow View of Wool.

In one of the yellowest of yellow journals appears an editorial beginning as follows:

> There is no honest reason why General Grosvenor's bill (for labeling shoddy cloth) should not become a law. Only rogues who want to deceive customers can object to it.—Editorial in this journal, February 17.
>
> "That," says General Grosvenor, writing to this journal, "sizes up the entire situation. While the language is a little more vigorous than I would have used, I think it can hardly be improved upon."

With this introduction the article proceeds to denounce the trade in wool substitutes which it calls "shoddy," in the most extravagant language, in which such expressions as the following occur:

> The naked truth is that they are swindlers.
>
> And the meanest kind of swindlers at that—SWINDLERS OF THE POOR.
>
> General Grosvenor states that our cities are raked and the cast-off clothing, worn-out blankets, horse coverings and all imaginable species of woolen stuff is gathered together and put through processes known to the trade, mingled with more or less wool, and manufactured into cloth. The ordinary man cannot detect this imitation.
>
> The poor man, each of whose scarce dollars represents hard toil, and the poor mother, out with her painfully saved little hoard to buy sorely needed clothes for the children, are made to believe that this shoddy, composed mostly of filthy and perhaps disease-carrying rags, is good cloth. A relatively low price induces them to part with their honest money in return for the dishonest stuff.
>
> The cheapness is only seeming, of course. There is no wear in shoddy. At any price it is dearer than real woolen cloth.
>
> It is a deliberate fraud upon the kind of people who can least afford to have their earnings stolen.
>
> A burglar becoming plaintive because the police have taken away his tools from him would deserve precisely the same amount of sympathy that these shoddy crooks are entitled to.
>
> The issue is merely one in which common honesty is opposed to theft.
>
> Wherein lies the moral difference between dealing in bogus gold bricks and bogus cloth?
>
> In each case there is the same design to obtain money under false pretences—to swindle.
>
> Just a plain measure to put a stop to a highly organized, very profitable and particularly base and cruel fraud.

To any one with but an elementary knowledge of the facts there is no occasion for attempting to refute such statements as the above, but the American people, the purchasers of woolen cloth, know very little about woolen cloth. The journals such as the one quoted circulate widely and instil this and other poisons into the minds of their readers.

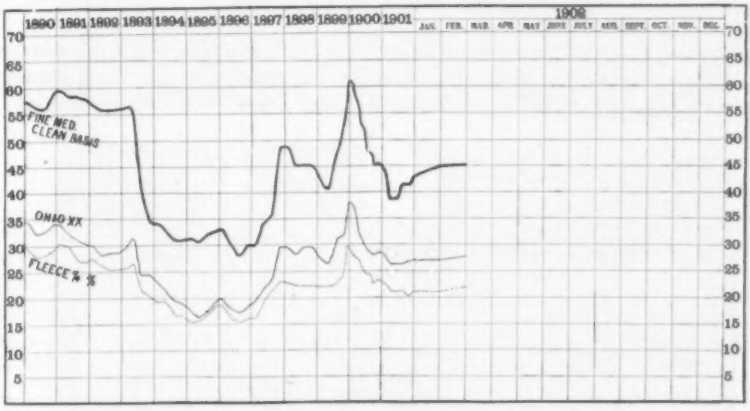
We present the above extract as a proof of the necessity for educating the public on the subject of textiles in general and wool in particular. Today the people of this country, who wield a power greater than that given to the people of any other land, are having their minds perverted regarding not only textiles, but other important questions, by an ignorant and vicious yellow press.

In Boston as in other parts of the country feeble attempts are made in the public schools to give instruction regarding the uses of textile fibres, but the student leaves school with but a dim idea of the truth and with a mind ready to accept as truth the wild and senseless ravings such as we have quoted.

As a remedy for this present defect in popular education we suggest an extension and improvement of the science courses in our schools, particularly as regards food and clothing.

A different remedy, however, is needed to protect the public from such poison as that we have quoted. In another part of this issue will be found some figures bearing upon the per capita production of wool, from which it appears that, if all the wool grown on this planet were made into cloth, and distributed equally among the people in need of warm clothing, each person would receive about 13 ounces of woolen cloth. Let the author of such extracts as the one quoted receive his share of wool each year: no more, no less. We believe that one winter's experience with 13 ounces of woolen cloth to serve as clothing would bring the offender to terms.

WOOL MARKET.



The feature of the wool market in February was the early movement of the new clip, made possible by the fact that shearing began unusually early this year. Prices paid for wool in the West have been fully up to the level of quotations in the Eastern markets, thus showing the confidence in the future on the part of traders.

It is difficult to find anything in general business conditions upon which to base a belief in lower prices for sheep's wool. The foreign market is stronger and prices higher. At home the country is prosperous with no cloud in sight. Woolen and worsted mills are busy and are consuming large quantities of wool.

Moreover, to emphasize these conditions contributing to higher prices, there is no increase in the supply of wool. The tariff acts as a barrier against imports, while the domestic clip shows no material increase. A comparison of the wool clip of the United States with that of the rest of the world, shows that our people are much better supplied with the material for warm and durable clothing than are the people of all other countries.

Our sheep supply each year 123.-

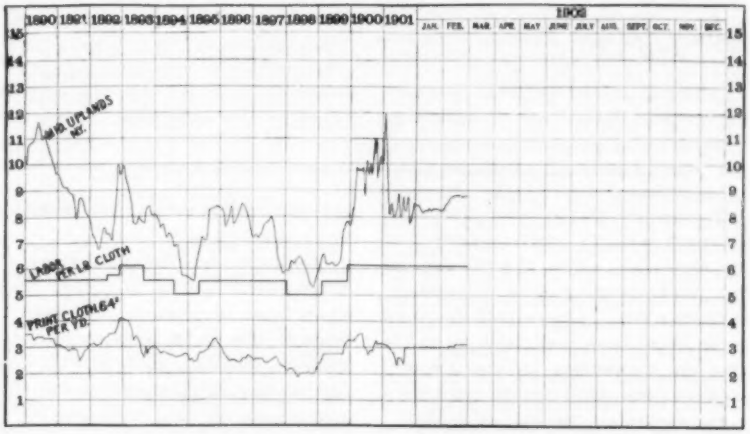
000,000 pounds of clean wool to our 76,000,000 people, or 25 89/100 ounces for each person. In the rest of the world, outside of the tropics, where practically no wool is raised or needed, the per capita production of wool is only 18 39/100 ounces. In other words, our wool growers supply our people with nearly 41 per cent. more wool per capita than is supplied to the rest of mankind.

When we consider that we export practically none of our own wool, but do import a considerable quantity (estimated at 21,000,000 pounds), we have a still stronger proof of the prosperity of our people. Adding our wool imports to the domestic clip, we find that the home consumption of wool amounts to 30 3/10 ounces for each person. Subtracting these imports from the supply to the rest of the earth's population, we find their per capita share to be reduced to 18 8/100 ounces. These figures show that the inhabitants of this country use 67½ per cent. more wool per capita than do the people outside of our boundaries.

When we take into consideration the difference in the price of wool here and abroad, we find a still more notable contrast. In spite of a 67½ per cent. larger supply of wool for each consumer in this country, the price of this commodity is actually much higher here than it is abroad. This difference in price is at least 50 per cent., and on some grades more than this.

In our February issue, appeared a chart showing the prices in England of three grades of tops. Anyone familiar with prices in this market can readily confirm our statement by referring to that chart. Could there be a better illustration or more convincing proof of the material prosperity of the people of the United States?

COTTON MARKET.



Cotton quotations have scored a substantial advance, which, as our chart shows, has not been accompanied by as many ups and downs as is usually the case. This indicates the speculation has in a measure been of less importance in the movement, and that the natural causes of supply and demand have been back of the rise.

The movement of the crop has been large, and on the 1st of March ex-

ports were 700,000 bales in excess of last year.

A decided improvement has taken place in the goods market, both at home and abroad. This is clearly shown by the rise in print cloths and the willingness of manufacturers to advance wages above the high level that already prevails.

It is believed in many quarters that the free movement of cotton should not be taken as an indication of the size of the crop, but that it simply means that Southern owners of the staple have been more disposed to part with their property this year, and that the end of the season will find stocks in a depleted condition.

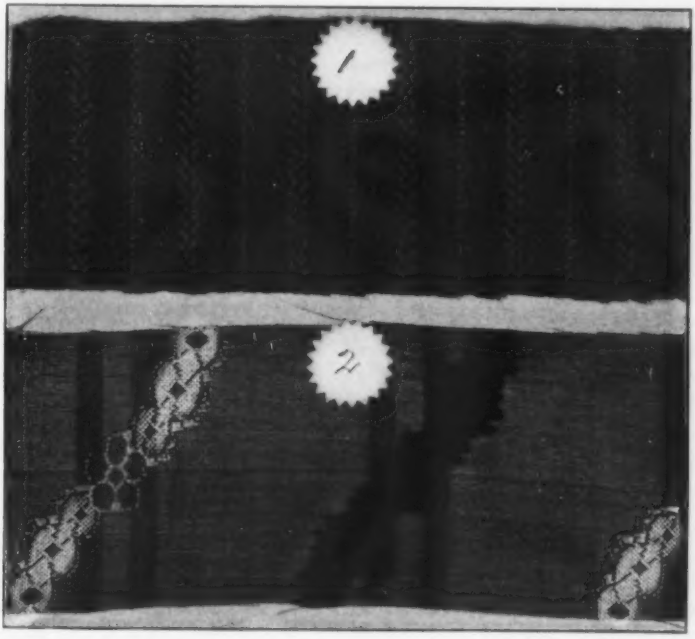
The Chronicle estimates the world's visible supply February 28th at 4,488,065 bales; as compared with 4,047,890 bales in 1901; 3,952,563 bales in 1900; and 5,416,326 bales in 1899.

Egyptian cotton is strong, with an advancing tendency. By the end of January the arrivals at Alexandria for the season amounted to 5,097,046 cantars, as compared with 3,695,975 cantars for the same period last year.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

The volume of business done on men's wear woolens and worsteds in fall weights has reached considerable proportions, but it is evident that buyers are proceeding cautiously and

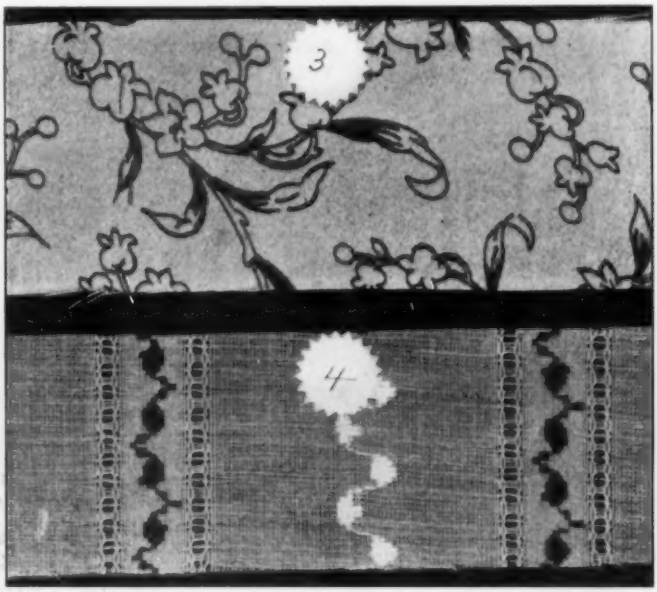


there is no inclination to place heavy orders. Since our last writing the Wanskuck line of clay worsteds were opened up at $1.05 for 12 ounce and graded up to $1.47 1/2 on 20 ounce weights, showing an average advance of from 5 cents to 7 cents over last season's prices.

Many irregularities in prices are noted, staples averaging perhaps, a trifle lower than last year while on fancies the difference lies in the other direction and in nearly every instance advances are recorded.

The business has also been somewhat irregularly distributed, some lines being reported practically sold up and withdrawn, others have come in for a fair share of attention, while still other lines have been all but neglected with practically no business of any consequense booked. The tendency seems to be largely in the direction of hard finish worsteds in neat effects for suitings and narrow stripes for trouserings. Twists in both woolens and worsteds are in coming in on light weight suitings and trouserings, but buyers complain of the difficulty of getting prompt deliveries.

There has recently been inaugurated among the sellers of woolen goods a movement to correct the growing abuse of the "selling samples" exaction by buyers. Efforts to stand out against the demands of purchasers for selling samples have been made from time to time by different individual houses, but recently



good demand and have been freely bought.

At Fig. 1 is illustrated one style of hard finish worsteds from the extensive line of the Edwards Worsted Co., which have been well sold up at $1.80 in 6/4 width. The same concern have another line, an all worsted fabric, pattern woven through and through, at $1.50, 20 ounce weight. The Coronet Worsted Co. have a line that has sold well at $1.75, 6/4 width.

Thibets which were thought so well of early in the season seem to have lost ground and are no longer looked upon with favor. Business is still

the matter was taken up by the American Woolen Co., and instructions were issued to their salesmen which will tend to curtail the "selling samples" privileges. These instructions are to the effect that no selling samples will be allowed on staples and piece dyes. In other departments the length of samples has been limited from 1/8 of yard on 3/4 goods to 1/4 yard on 6/4 goods except in the case of large jobbers where slightly larger samples will be allowed, but in no case are these samples to exceed one yard in length.

WOOL DRESS GOODS.

The demand for thin, sheer, light weight fabrics for spring wear still continues, and duplicate orders are being received in very satisfactory quantities. Considerable attention is now being given to lines of fall dress goods, but as yet buyers have been holding back from placing orders, seemingly awaiting the development of new styles. Plain solid color fabrics will, undoubtedly, still continue to be the leading feature of the fall season, although there are some signs that seem to point toward a revival of fancies. Broad cloths and Venetians in the heavier weight goods and mohairs, Sicilians, Albatrosses and goods of a like nature will probably come in for the greater share of attention.

SILKS.

The silk piece goods market is in an exceptionally healthy and satisfactory condition and practically nothing in the way of desirable goods is to be had for immediate delivery. The demand has not been on any particular class of goods but seems to have been fairly well distributed.

Just at the present moment there is a dearth of both black and white satin duchesse goods to cost from 72 1/2 cents to 95 cents per yard, and manufacturers are not promising deliveries inside of 3 to 5 weeks. Moires also continue in strong favor, and buyers are still placing orders on satin foulards and printed liberties.

In the higher priced goods, grenadine weaves are undoubtedly the leaders and many beautiful fabrics have been produced. In Fig. 2 is shown one of the newest and handsomest designs from the line of Dougherty & Wadsworth, in a 44-inch cloth which has been sold at $1.65. The ground color is black with alternating black and white serpentine pattern over black satin stripes.

The popularity of the satin printed foulard, as already noted, still continues, notwithstanding it was feared the increased production would be greater than the demand and the market thereby become glutted. One of the best selling patterns of the Duplan Silk Co., Cozzens, Elbers & Prankard, is illustrated at figure 3. A dainty floral design in black and delicate green tints is printed on a white or cream ground, making a very neat and handsome pattern. In a 23-inch width this cloth has been a popular seller at 62 1/2 cents regular.

Pongees, Shantung, Shanghais and goods of a similar character are much sought after and a number of novelties in goods of this description have been produced, one of the most successful of which, was placed on the market by Boesneck, Broessell & Co. This is a natural color cloth with fine cords of many tints, and strips of blue, pink, etc. At 50 cents regular, it has been an excellent seller and the entire line was sold up several weeks in advance from the original samples and deliveries are only now being made. No attention is as yet being devoted to fall lines of silks, and little can be said of the prospects except that velvets will undoubtedly occupy fully as prominent a place as during the past season.

COTTON GOODS.—LININGS.

The general tone of the lining market has been firm with an upward tendency of prices following upon the recent advances in prices of print cloths. Kid finished cambrics have been advanced 1/4 cent, and are now quoted at 3 3/4 cents for 64's, but no pronounced buying activity has developed.

Lines of mercerized and silk finished linings are in good condition and prices remain steady. Fairly liberal orders both for spot delivery and for Fall have been placed by the clothing trade, principally on cotton Italians, Alberts and twills. From the fact that the gray goods market is firm with little or no stock on hand, it is likely that present prices will be maintained for some time to come.

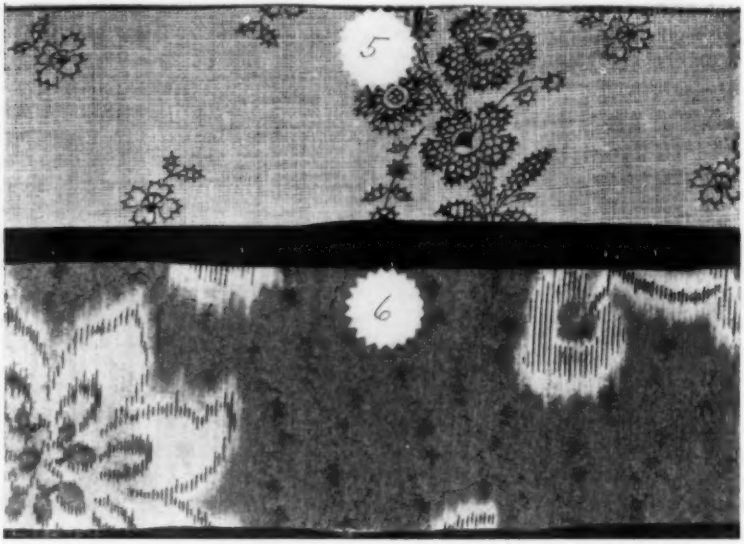
WHITE GOODS.

The retail white goods season is now fairly under way and jobbers' stocks are rapidly becoming depleted. This is plainly indicated by the manner in which re-orders are coming in to the manufacturer and there is a decided scarcity of ready supplies. Prices on all descriptions of white goods remain firm and will undoubtedly continue so throughout the season. The finer grades of India linons are particularly scarce, and buyers are clamoring for goods of this description for spot delivery.

by the Arnold Print Works at 12 1/2 cents less 10 per cent. This fabric is an excellent imitation of the genuine French flannels and the color work is exceptionally good.

Another dainty novelty from the same concern is represented in figure 4, and is known as silk finished linen. This is, as the name would indicate, a silk embroidered pattern on an ecru or linen colored ground. At 20 cents regular this cloth has been freely sold and its success was assured from the start.

Black and white printed effects of



WASH GOODS.

Notwithstanding the fact that unusually large advance orders had been placed, supplementary business on wash goods of every description has already reached considerable proportions with the jobbing trade, and an unusually strong demand is plainly in evidence.

As the season advances, the popularity of some fabrics over others is demonstrated by the trade demands, and already some marked preferences have been noted. The Eclipse flannels, one of the novelties of the season, has been placed on the market

all descriptions, more particularly in delicate lace patterns have been very successful, and many beautiful designs have been produced. One of these fabrics, a stripe of the Cocheco Co. sold at 10 1/2 cents. The Arnold Print Works offer a line of Fine Dimities at 12 cents. Fig. 5 is a pattern of the Aristo Batiste produced by the Pacific Mills and sold at 7 1/2 cents net. In Fig. 6 is illustrated one of the novelties of a higher class in a silk mixed printed fabric sold by the Arnold Print Works at 37 1/2 cents regular.

On the majority of staple lines of

prints, there has been an advance of 1/4 cent per yard. In some cases where no advances have been made, investigation has shown that the sellers had no spot goods on hand, consequently were refraining from making advances until they had goods which could be charged up.

Stearnofil.

A New Filament or Artificial Silk.

The Chardonet and Lehner processes for preparing a solution from which they produce an artificial silk, are practically identical, both employing an acid cellulose solution, which may be likened to a liquid celluloid.

Cross & Bevan the well-known chemists of London are the inventors of a process for dissolving cellulose by means of an alkali instead of an acid, the resulting solution being known as Viscose.

For many years prior to 1899, filament had been produced by both the Chardonet and Lehner processes, but it was very conbustible, and, therefore, dangerous to transport and to manufacture, and until 1899 no process had been discovered for at all effectually denitrating the filament made from nitro cellulose solutions, but since that time quite successful results have been obtained by treating the filament with alcohol. The artificial silk produced by the Chardonet and Lehner processes is soft, flexible, lustrous, of satisfactory strength for many purposes, and its cost to manufacture is about $1.25 per pound.

The cupra ammonium process for dissolving cellulose has been known and practiced for many years, notably by the Willisdon Co., but not until recently has a successful attempt been made to use the cupra ammonium solution in the manufacture of a filament adapted for weaving. The cost of manufacture of filament by the cupra ammonium process is believed to be not less than by the Chardonet and Lehner processes. The apparatus employed in all of these three processes is very expensive, that for the cupra ammonium process being estimated to cost $500 for each pound of filament made per day on a basis of a 1000 pound per day output.

Charles H. Stearn of London is the inventor of the new artificial silk known as Stearnofil. In connection with Mr. Swan, a well known England electrical inventor, an electric lamp filament was made nearly twenty years ago by Mr. Stearn from cellulose dissolved by the cupra ammonium process. One of the difficulties then encountered by these gentlemen was the expense of the raw material they were then using.

About four years ago, Mr. Stearn learning of the invention of Cross & Bevan, began a series of experiments with the view to producing from it a satisfactory electric light filament.

Stearn's early experiments with Vicose convinced him that an extremely fine filament could be manufactured; one which could be used in the manufacture of textile materials. To reach this result necessitated a long series of experiments. In this work Mr. Stearn was greatly assisted by M. Charles Bardy, the French government chemist, whose investigations extended over a period of nearly eighteen months.

M. Bardy was called into this investigation by the intending purchasers of Mr. Stearn's French patent, who, in spite of the fact that other processes for the manufacture of artificial silk had made at best only partial successes in France with generally great financial losses, were willing to purchase Stearn's French rights provided Stearnofil met all the requirements laid down by M. Bardy.

As a result of M. Bardy's report, a group of French capitalists, headed by the Marquis De Beauvoir, purchased the rights to manufacture and

sell Stearnofil in France, for $250,000 cash. A company has recently been launched in Paris, having a fully paid in capital of $1,000,000. Machinery and apparatus are now being manufactured for the French company, designed for a large daily production of Stearnofil at an early date.

During the early stages of Stearn's experiments and before his difficulties had been more than partially overcome, the representative of Prince Guide Henckel Von Donnersmark of Germany saw the possibilities of the Stearn filament and persuaded the prince to purchase the German rights. As in the case of France, we are informed a manufactory has been constructed in Germany and installation of apparatus will shortly take place.

The attempts to manufacture artificial silk in Great Britain have up to a very recent date proved most unfortunate, both the Chardonet and Lehner companies, organized in England, having met with financial disaster. Owing to this fact, the English Spinning Syndicate, which controls Stearn's patents for Great Britain have been very careful not to publish their results, but have quietly disposed of their output of Stearnofil for the past few months to several weaving firms in England, who have used it to produce special effects. Several serious financial propositions have been made by capitalists to the English Spinning Syndicate looking to the formation of a large organization to purchase Stearn's British patents, but up to the present time no proposition has been accepted.

Viscose, the raw material from which Stearnofil is manufactured, is a solution made by treating wood pulp with a caustic alkali and a subsequent treatment with carbon bisulphide. This solution is then placed in a suitable vessel, from which it is forced under pressure through minute holes in the disc into a solution of chloride of ammonium. The chloride of ammonium precipitates the Viscose solution, instantly bringing it into the form of a semi-solid filament. Eighteen of these tiny filaments are brought in close contact with one another, while passing through the chloride of ammonium bath, and cohere to form a single thread of about the size of 135 denier silk number. This single thread while exposed to the air is carried over a pulley and into a box containing a mechanical device, which gives it a twist, thus increasing its strength. It is afterwards reeled, cleansed and bleached.

The cost of the apparatus for performing this entire operation does not exceed, we are informed, $50 per pound of filament per day, which is much less than the cost of the apparatus employed by any one of the several other processes for making artificial silk.

Stearnofil has about the same inflammability as cotton. It is soft and lustrous, having most of the general characteristics of real silk. Its tensile strength is about 60 per cent. of that of silk. It is capable of taking direct dyes, and its brilliancy is greater than that of silk in the different shades.

It is interesting to know that the lustre of the artificial silk is produced in the same way and is due to the same causes as that of mercerized cotton. The reason why mercerized cotton has a lustre is because of the chemical action which changes the outside of the cotton fibre from a cellular structure, which absorbs light, to a structureless cellulose, which reflects light. Stearnofil has the same characteristics insomuch as the Viscose from which it is made is absolutely structureless.

We should judge that it was suited to a higher grade of fabrics than mercerized cotton. The samples of damasks which we have seen were very fine.

Stearnofil stands washing and even boiling, but when wet its strength is

appreciably lessened. When again dried its normal strength is regained.

The principal difficulty which has attended the introduction of the manufacture in this country of artificial silk by the Chardonet and Lehner processes has been due to the prohibitive cost of alcohol, which is essential to the denitrating process due to the heavy United States tax.

One of the great advantages in the manufacture of Stearnofil seems to lie in the fact that it dispenses both with the use of costly chemicals and in the employment of expensive apparatus.

Stearn's American patents have been purchased by the General Artificial Silk Co., incorporated under the laws of Delaware, among its directors being George F. Hutchins, general superintendent of the Crompton & Knowles Loom Works; A. M. Goodale, treasurer of the Boston Manufacturing Co.; Charles F. Bochman, a large silk and woolen dress goods manufacturer of Philadelphia, while the president of the company is Thomas H. Harrison of Harrison Bros. & Co., large chemical and paint manufacturers of Philadelphia, and its treasurer is William H. Sharp, president of the Jessup & Moore Paper Co. of Philadelphia.

It would seem as though this new filament is destined to find an important place in textile manufacture.

Leno Weaving.

Editor Textile World:

An article was published in the October issue of the Textile World, and I have been waiting since that time to see if any comments would be made. I have three faults to find with it:

1. The writer makes no provision for the raising and lowering of the half heddle in the open shed. It is pulled up or down by the whip thread; this is not practical except with heavy yarns, and even then it pulls the doup to pieces.

2. The three back gauze heddles are too near the front; they should be as near the back as it is possible to get them. In this way there is less strain on the two threads crossed by the doup.

3. There are no means provided for moving the slackener.

These are three very serious faults, to which I venture to call your attention. FANCY COTTON.

Passing of the Jean.

A noteworthy event in the textile industry is the passing of the jean. At one time this fabric was an important if not the leading branch of the men's wear trade. The decline has been slow but steady. One who has been actively identified with the jean trade for many years writes us as follows:—

"As to the passing of the jeans business and the cause there are many views. My judgment is that it is owing to the more general use of corduroy, cotton warp cassimeres and denims, the latter used in overalls and by many people a large part of the time without the use of trousers under them. There was a time when the jean fabric was sold all over the country and went into full suits for both men and boys, but in recent years it has gone largely to the Middle West, West and South, and is used largely for trousers only.

"Cutting the price and the manufacture of inferior fabrics have had much to do with the condition of the jean market today; however, there has been a healthier demand for the fabric during the last six or eight months than for several years, owing no doubt in part to many looms in this line being thrown out or changed to some other line of goods. If there could be two or three grades only of jeans made to fit popular prices for the garment, and the grade as well as the price could have some stability, I am of the opinion that the use of the fabric could be increased and a fair profit realized."

—Loud complaints still continue to be heard from Canadian woolen manufacturers regarding the effect of the preferential tariff on woolens by which English goods are admitted into Canada at a reduced rate of duty. The Canadian manufacturer has to compete with a supply of imported woolens 10 times as large per capita as that which the woolen manufacturers of the United States compete with, and as a consequence they are making vigorous appeals to the Canadian government for relief. No action has been taken, but it is reported in a semi-official way that a conference is to be held in London, immediately following the coronation ceremonies, at which an effort will be made to extend the preferential system of duties throughout the British empire. That time is considered auspicious, owing to the presence in London of leading representatives from all parts of the empire and to the enthusiasm accompanying the coronation ceremonies. It remains to be seen whether an increase of the reciprocity dose will give the Canadian woolen manufacturers the relief of which they are in such dire need.

—According to a report issued by a textile association of Barmen, Germany, wages in the textile industries of that region show a steady increase from 1892 to 1900. In 1892, there were 14,579 operatives, the average yearly earnings of each being $199 or about 66 cents per day. In 1900, the operatives had increased in number to 18,487 with an average yearly wage of $230 or 77 cents per day. According to the U. S. Census of 1900, the average yearly earnings of operatives in the textile industry of the United States were $343 per capita.

—Who speaks, sows; who listens, reaps.—Baron de Hervo.

—Favoritism seldom makes a wise selection.—Marmoutel.

The Mercerizing of Cotton Yarn and Cloth.

By Paul Gardner, Technical Chemist.

During the short time since the discovery that mercerization imparts lustre to cotton under certain conditions, many theories have been advanced as to the cause of the phenomenon. It is, however, of much greater importance to establish the conditions influencing the operation, irrespective of theoretical speculations.

A silk-like lustre can be given by mercerization only to long staple cotton, such as Egyptian and Sea Island.

Some lustre is given to American cotton, but nothing like that obtained by the use of the long staple varieties. Unfortunately the differences in the chemical structure of the different grades of cotton are but imperfectly known further than that Egyptian cotton is much more yellow in shade and has a much longer staple than ordinary cotton. Egyptian cotton possesses in its natural state a high lustre that is not found in other grades.

The manner in which the yarn is spun is not without influence upon the lustre of subsequent mercerization. The highest lustre is obtained on combed yarn that has not been twisted too hard. Spinners now make a special yarn for mercerizing.

The lustre is obtained only by subjecting the yarn to tension and treatment in a caustic soda solution at the same time.

Cold soda liquor causes a greater shrinkage of the staple of all kinds of cotton than do hot solutions. The lustre is obtained either by preventing this shrinkage or by stretching the yarn to its original length while it is still under the influence of the alkali.

These facts can be readily demonstrated. If a skein of Egyptian cotton yarn is steeped in cold soda solution having a strength of 30 degrees, then freed from the surplus soda either by rinsing in water or acid, the yarn will be found to possess a silk-

like lustre. The same result is obtained when the skein is first steeped in the soda solution, next stretched to its original length and the soda then removed.

The height of the lustre is exactly in proportion to the contraction of the staple and the efficiency with which this contraction is prevented. The following table gives the results of experiments in mercerizing cotton at different temperatures, in soda solutions of different degrees of strength and for different lengths of time.

Soda solution	5° B.			10° B.			15° B.			25° B.			30° B.			35° B.		
Time, minutes	1	10	30	1	10	30	1	10	30	1	10	30	1	10	30	1	10	30
Temperature																		
2° C.	0	0	0	1	1	1	12,2	15,2	15,8	19,2	19,8	21,5	22,7	22,7	22,7	24,2	24,5	24,7
18° C.	0	0	0	0	0	0	8	8,8	11,8	19,8	20,1	21	21,2	22	22,3	23,5	23,8	24,7
30° C.	0	0	0	0	0	0	4,6	4,6	6	19	19,5	19	18,5	19,5	19,8	20,7	21	21,1
80° C.	0	0	0	0	0	0	3,5	3,5	9,8	13,4	13,7	14,2	15	15,1	15,5	15	15,2	15,4

SHRINKAGE OF COTTON UNDER DIFFERENT CONDITIONS OF MERCERIZATION

By these tests the following interesting facts are established:

1. Soda solutions under 10 degrees of strength cause no shrinkage.

2. The duration of the process has no material influence.

3. A 35 degree soda liquor works better than one at 30 degrees, although the difference is but slight. Tests were made with a 40 degree liquor, but the results are not given in the table as no increase of shrinkage was caused, while the treatment of cotton in such a strong liquor is open to serious objections.

4. The temperature should not go above 15 degrees C. to 20 degrees C.

The duration of the process as well as the mechanical handling of the material are of secondary importance. Whether the cotton is dry or moist when immersed in the soda liquor is of minor importance. The essential point is to effect a thorough saturation of the yarn. It does not matter much whether this saturation continues for a few minutes or a few seconds; neither is the method of handling the material of importance, providing the saturation is uniform.

Many have held that the mechanical operations had great influence on the results obtained. Machines have been built to stretch and squeeze the yarn as much as possible. A smoothly pressed yarn, many broken ends and identically the same lustre as without these mechanical operations have been the only results.

It should be borne in mind that the contraction of the fibre during the process is so great that in the case of a very small skein of yarn it is sufficient to break the strongest glass rod used in the laboratory. This immense strain is not sensibly reduced by subjecting the yarn to outward pressure. On the other hand the lustre is greatly increased by brushing and pressing the yarn after mercerizing.

The cotton is subjected to the greatest tension while being handled in the soda solution. After washing out the soda, the yarn should not shrink.

The process can be judged from the length of the yarn or cloth before and

after mercerizing. Yarn should be of the same length or possibly 3 to 5 per cent. longer after the process. Cloth should be of the same width before and after.

After the effect of tension became known, the assumption was natural that an increase of this tension would heighten the lustre. The results of

Fig. 50.

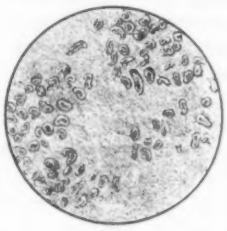


Fig. 51.

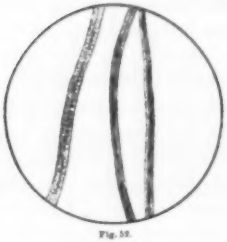


Fig. 52.

Fig. 53.

Fig. 54.

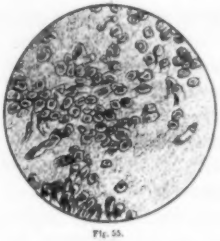


Fig. 55.

experiments in this direction have been broken ends and torn selvages without any increase of lustre.

The yarn should be stretched as much as possible, but it is of greater importance to remove the surplus alkali from the material before it is taken from the stretching machine. Any excess of soda left in the yarn will cause a further shrinkage and a corresponding reduction of the lustre.

It is unnecessary, however, to remove all trace of the alkali, since as shown by the preceding table, soda liquor below a strength of 10 degrees causes no shrinkage.

While these phenomena indicate that the lustre results from a mechanical process, the fact that a higher lustre is obtained on Egyptian cotton than on other grades indicates that the development of this lustre is the result of a chemical process. Probably the process is both mechanical and chemical, but until the chemical differences between the different varieties of cotton are better known, a discussion of this point will be profitless.

An important property of mercerized cotton, either stretched or left to shrink, is its increased affinity for all dyes. The saving of dyestuff amounts to 10 per cent. or 15 per cent. for light shades, and 25 per cent. to 30 per cent. for dark colors. It should not be assumed that this econ-

omy is only apparent. The saving results from the mercerized cotton more quickly absorbing the dye. This has been demonstrated by careful tests with the direct colors, indigo, Paranitraniline red and mordant dyes. The causes for this, although perhaps not the only ones, are that the dye collects more on the outside of the mercerized fibre and penetrates the centre to a less degree, while at the same time the lustre of the mercerized yarn increases the intensity of the shade.

Buntrock has made tests as to the strength of mercerized cotton, with the following results:

Five threads 50 cm. long of 2/40s unmercerized cotton yarn broke under a weight of 1440 gr. Five threads of the same yarn mercerized but not stretched broke under a weight of 2420 gr. Five threads of this yarn mercerized and stretched broke under a weight of 1950 gr.

The unstretched mercerized yarn was thus 68 per cent. stronger than the unmercerized yarn. The stretched mercerized yarn was 35 per cent. stronger than the yarn not mercerized.

Before breaking, the yarn stretched somewhat. In the case of unmercerized yarn this extension amounted to 11 per cent.; unstretched mercerized, 16½ per cent.; stretched mercerized, 11 per cent.

The ordinary unmercerized cotton fibre is seen under the microscope to be in the form of a twisted ribbon, as shown at Fig. 50. The cross section, at Fig. 51, shows the fibre to be ear shaped and to have an opening in the centre.

Treatment in a strong soda solution at the normal temperature causes the fibre to swell widthways and shrink in length. The twisted and ribbon-like form is lost, and under the microscope is seen to have the form of a rod bent at frequent intervals, and to be transparent; the surface is rough and wrinkled, with a more or less distinct seam running through the centre of the fibre, see Fig. 52; the cross sections, shown at Fig. 54 vary from an oval to a round form, and the wall of the cell is much thicker. The opening in the centre is seen in some cases to have widened and to possess radial arms.

Fig. 54 shows the mercerized and stretched cotton fibre, as seen under the microscope. It is now slightly curved, rigid and transparent, with a smooth, uniform surface and a central opening which at times disappears entirely. The cross section, see Fig. 56 is round, with a more or less distinct opening at the centre. The flat form of this opening has disappeared.

—The drawback law, by which 99 per cent. of the import duties on raw material used in manufactured goods was refunded when such goods were exported was designed to encourage our export trade in manufactured goods, which in some lines is otherwise made impossible by the heavy duties on raw materials. The law has been of but little benefit owing to the difficulty of identifying the imported materials in the manufactured goods. This has been the case with woolen and worsted goods, in which the materials are so changed and mixed with others in the process of manufacture as to make it impossible in most cases to tell whether the goods were made from imported stock or not. Congressman W. C. Lovering has introduced a bill into the house which is intended to remove the objection to the present law as regards manufactures of metal and leather. Under the proposed act, an exporter is entitled to the drawback, provided the manufacturer of the exported goods has purchased and received an equal quantity of ore, metal, hides and leather necessary for the manufacture of the exported articles.

—The best doctor is he who argues the least and observes the most.—Maupertius.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

New Over Edging Sewing Machine. The Union Special Sewing Machine Co., of Chicago and New York, are putting onto the market a new machine which they call single interlock machine, class 12,900. This is especially adapted to underwear and hosiery, and is designed for over edging, hemming and seaming. It runs at high speed, and gives an elastic seam, hem or edge finish.

Purifying Water. The Automatic Water Purifying Co., 45 Broadway, New York, are introducing into this country a system of purifying water that has been in successful use for several years and in many establishments in Europe. A detailed description appears in the Power Department of this issue.

Bale Tie and Buckle. The De Haven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y., are placing on the market a device for fastening bales, which, they claim, will revolutionize present methods. The malleable iron buckle is so constructed that there is no protruding end. The tie is made of cold rolled Bessemer steel, with a special hard oil finish, to prevent rust. The makers claim it to be from 20 per cent. to 25 per cent. cheaper than sisal and 5 per cent. cheaper than jute, and that it will not stretch after leaving the press. A detailed description will appear in the next issue.

Shoddy Picker. Crawford & Co., Worcester, Mass., are introducing the new "Worcester" shoddy picker. The features for which they claim special merit are that it does away with gauze-room, thereby economizing space; the bottom and top feed rolls are alike and interchangeable; cylinder boxes self-adjusting. The stock is discharged underneath the feed table and conveyed by the condenser to the carrier apron, then rolled into a lap or roll or allowed to drop on the floor as desired.

Automatic Oil Cup. The New York Lubricating Oil Company, 35 Water Street, New York, are placing on the market an automatic oiler for machinery bearings. A wire runs through the journal to the oil in the cup above, and when the shaft starts, the oil is drawn to the bearings on the principle of a syphon. When the shaft comes to a stop, the oil supply is stopped automatically. It is claimed that with this oiler a constant feed of oil is maintained in the right quality. When once adjusted, it is said to require no further attention except to replenish the oil in the cup, which is dust proof. It is now used by some of the leading manufacturers throughout the country.

A New Flyer for Roving Machines. The Textile Machinery Co., 66 State St., Boston, are placing on the market the Improved Dunn Flyer for roving frames. This is now in successful operation in several New England mills. Among advantages claimed are that it is 35 per cent. lighter than any other flyer, and,

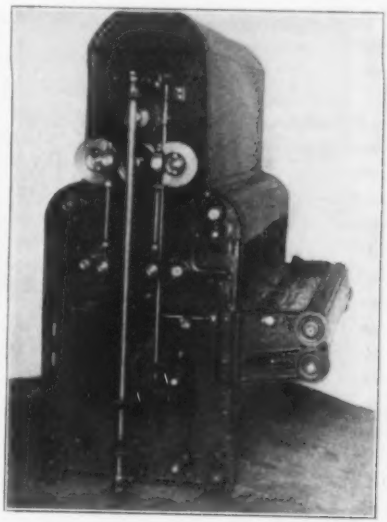
therefore, capable of greater speed, but even if speed is not increased it is claimed that there is less breaking and consequently less piecing of ends thus giving increased production. Also minimum repairs are claimed for the Duun Flyer, because the pressers being greatly relieved of strain, do not break. Fay H. Martin, the president and manager of the company, is an experienced manufacturer and has studied to improve the construction of the flyer in every detail.

Handy Force Pump. Bamford & Smith of Pascoag, R. I., are introducing to the mill trade the Utility force pump. This consists of a large pail, holding 14 quarts, to which is securely attached a hand force pump with a short hose and nozzle. It will throw a stream of water with force and accuracy 25 feet. It has proved itself of great value in extinguishing fires in and around the mill, with little water damage, and in inaccessible places it is especially valuable. It is easily picked up and carried anywhere. We understand the same apparatus is also used with much success in spraying whitewash and paint on walls and in many other ways about the mill, house or stable. Price is low.

Oiler. W. W. Nugent & Co., 18 W. Randolph Street, Chicago, Ill., are introducing a new device for oiling cross head pins. It is claimed that it will not waste or leak a drop of oil. There are no packed joints, and no stuffing boxes or gaskets are necessary. The slipping of the tubes is prevented by being fastened with cotter pins that fit into heads, half of the pins extending into grooves turned in the bearings.

Yarn Drying Machine. Frank Bailey, Cedar Brook, N. J., has recently completed and is now introducing to the trade a machine for drying skein yarn by the cold air system. It is claimed that this dryer not only saves the cost of material and the injurious effects of a high temperature, but is also very efficient as regards production.

Card Feed. The American Card Feeder Company, Amsterdam, N. Y., are about to place on the market an automatic weighing feed for carding machinery, and a worsted card feeder both the invention of James Hogg. The accompanying illustration shows the first named machine. Both are constructed on a new principle, and



it is stated that the stock is not rolled up nor is the long stock separated from the short. It is claimed that the feeder delivers the stock uniformly irrespective of the quantity of material in the feed. The builders state that the worsted card feeder reduces the quantity of noil, and that the stock is delivered to the burring cylinder in so open a condition that feed rolls are not necessary. The fact that this feeder does not separate the short from the long stock has been found to be of great advantage for worsted goods.

Shoddy Picker. George Gerry & Sons, Athol, Mass., have recently placed on the market a shoddy picker, which, although built according to the ordinary principles of this class of machinery, possesses some novel features. The steel cylinder shaft is 2 3/16 inches in diameter, thus giving stability to the cylinder. A six-inch fan is used, having six floats instead of three. The apron is controlled by a lever.

Cloth Trimmer. The Woonsocket Machine & Press Co., Woonsocket, R. I., are introducing an improved cloth trimmer for inspecting and brushing cotton cloth, leaving the cloth on rolls. The goods can be moved in either direction as desired.

Steam Separator. Sack & Kiesselback, Rath, near Dusseldorf, Germany, have lately introduced a water separator for steam pipes. It consists of a chamber inserted in the steam pipe, and much larger than the latter in diameter; this results in the slow movement of the steam at this point. In this chamber are placed sieves to catch the water, which is then conducted into a receptacle, that is automatically emptied when necessary.

Air Moistener. Pick und Winterstein, Schotenring, 31 Vienna, Austria, are offering for sale an air moistener, invented by Jacob Munk. A blower forces the air through an inclosed space containing an evaporating apparatus. The builders claim that the humidity of the air can be closely regulated and that no excess of moisture can be given to the air by this apparatus. The machine is made in various sizes. The firm mentioned are agents for all countries.

Rotary Sizing Machine for Skein Yarn. B. Cohnen, Grevenbroich, Germany, has brought out a sizing machine for skein yarn, having a capacity of 1000 to 1200 lbs. yarn per day with one operative. It has six pairs of rollers with extra large press rolls, and is automatic in operation. The duration of the sizing can be regulated as desired.

Gas Machine. Gasmachenfabrik Act-Gesekkschaft, Amberg, Bavaria, Germany, are putting on the market a gas machine, which they claim is much superior to any now in use. It consists of the usual carburetor for gasolene, also a pump for supplying the necessary air. The gas is made by a mixture of the air with the gasolene vapor in the carburetor. It is claimed for this machine, that its peculiar construction prevents impurities such as ammonia, hydrogen sulphide, carbonic gas, etc., from becoming mixed with the gas. It is also stated that this machine produces gas at a greatly reduced cost.

Roller Covering Machinery. Dronsfield Bros., Ltd., Oldham, England, are putting on the market a newly designed machine for grinding and truing surfaces covered with leather. The rollers are carried in chucks, which accommodate various sizes. The rollers can be quickly placed in position for grinding and removed when ground. The grinding disc is covered with a special filleting, which can be easily renewed. The traverse motion is adjustable.

Brush and Clearer for Top Flat Cards. Messrs. Philipson & Co., Oldham, England, are introducing a new combination brush and clearer for top flat cards. It consists of two sheets of wire at right angles with the roller. The wire of the brush penetrates the card wires instead of crossing over the points. Between each sheet are adjustable lags fitted with bristles. These lags can be raised as they wear away at the top. Each roller has a clearer to prevent the loose cotton from riding on the points of the wire. A cleaner removes the cotton from the brush, when full.

COTTON DEPARTMENT.

Imperfection in Weaving.

V.

ARTHUR DYSON.

Before the advent of the "Northrup" loom, a weaver, by dint of constant oversight and care, was able to run from 6 to 8 looms, according to the quality and weight of the cloth being made, and it was one of the principal parts of their work, to change the shuttles and to keep their looms running as much as possible.

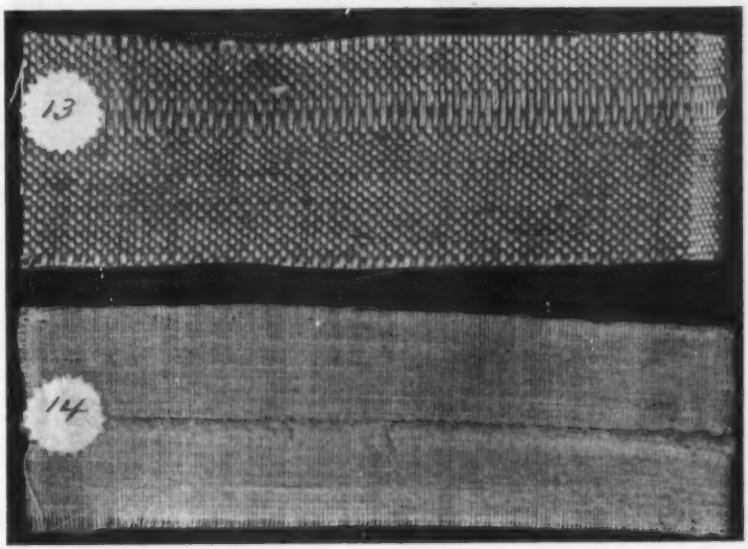


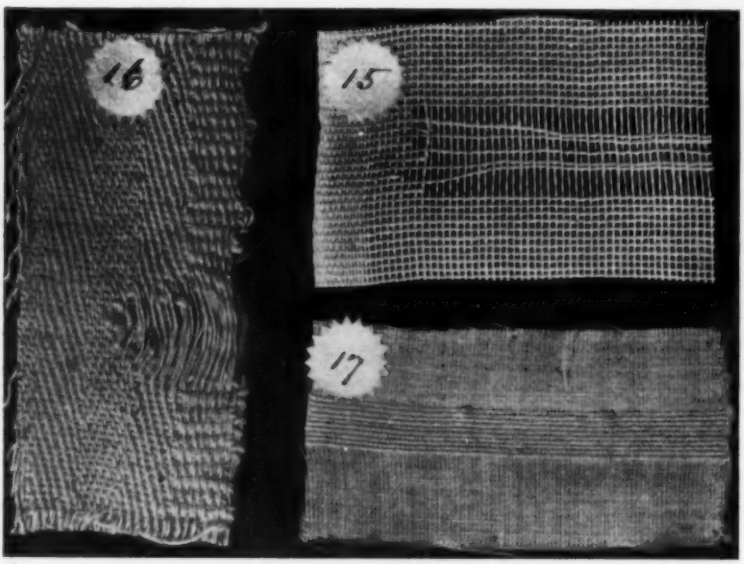
Fig. 13.

Naturally there was a large proportion of the weavers who would sacrifice quality for the sake of quantity, and who would adopt all kinds of expedients to secure a good week's pay with the expenditure of as little labor as possible. I remember at one mill where I worked, one of the principal duties of the overseer was to go around the looms, and with a yard-stick measure every piece of cloth being woven, to make sure that the required width was being woven, the trouble arising from the fact that the weavers would take off some weights from the friction lever, thus causing the warp to become too slack; every few minutes the weavers would "draw up" on the takeup wheel, causing a piece of cloth to be woven which did not have the required number of picks called for by the lay-out, and often producing a thin place similar to that shown in Fig. 13. Such goods were rejected by the inspector and sent back to the weave room.

Now we find weavers on ordinary goods, such as lawns, light sheetings, India linens, calicoes, etc., running from 12 to 20 looms; and on prints as high as 24 looms; and the question of "pickouts," scratchups, and uneven cloth, has been greatly reduced. The Northrup loom, equipped with warp stop motion, and filling changing devices, has almost entirely obliterated these imperfections, and,

consequently, in the consideration of imperfections made by these looms, we may take up other defects which appear in the cloth, and also the remedy to be applied.

At Fig. 14 is illustrated an imperfection which I have seen very often in cloth taken from looms of this class. There seems to be a number of picks woven together, producing a heavy filling cord running across the cloth. At first sight such a conclusion might very easily be arrived at, and in one



mill where the writer knew the man in charge, such was the decision given. One day when I visited the mill I was shown the imperfection and told what they thought was the cause of the trouble. The matter was not referred to further, so I do not know what the final outcome was in the case of that particular mill, but the next time I was in a mill where they used the Northrup loom, I made it a point to observe the looms closely, so as to determine whether such an imperfection could be made by the loom, and whether it was simply caused by the filling coming off the bobbin all tangled together. My discoveries were not at all startling, and yet they may be of interest to some of my weave-room friends who have charge of these new looms.

I found that when an empty bobbin was ejected from a shuttle and a full bobbin placed there, that, owing to the temples being set at some distance from the end of the shuttle box, there was quite a long strand of filling which hung from the end of the magazine, and when cut off by the "filling cutter," this end hung down in the path of the lay. When quite a number of these strands accumulated (as they did where the weaver was careless about removing them), they were caught by the picking stick and, becoming entangled in the shuttle, were carried across the open shed in the cloth and thus produced this imperfection.

There are but two remedies for this trouble that can be used at present, and both of them should be kept in mind. (1) The overseer should have someone whose duty it is to see that all magazines are kept free from long strands, and this person should keep a close watch on the weavers or

he might employ a small boy to go over the looms, and cut off these strands. (2) The cloth on Northrup looms should be woven in such widths as called for by the construction of the loom; 30 inch cloth should not be woven in a 40 inch loom.

Another imperfection which sometimes arises on this class of looms is shown at Fig. 15. Here we have something entirely different from the imperfection in Fig. 14. It was caused by the filling cutter becoming imperfectly set, thus cutting the filling while the shuttle was in the shuttle box; the result is that the filling is absent from every other shed, and was simply dragged behind the shuttle; when the opposite end of the cloth was reached it was caught by the closing of the warp threads, and thus held while the shuttle made the return journey.

While this difficulty does not often occur, it is one of the things which an overseer should be on the look-out for, and many of our mill managers are gradually becoming convinced of the benefit which is derived from having a wide awake person continually on the lookout for these and other defects, while at the same time looking to the question of the waste left on the bobbin by their being thrown out too soon, a question which is a very serious one, and, although entirely apart from the scope of this article, coming more in the line of profit and loss, yet of sufficient interest to warrant this brief allusion to it. Perhaps I may give a few notes concerning this question in some future number of the Textile World.

During a conversation with a friend a few days ago, the question was raised as to the weaving of heavy cloth, especially sail cloth and heavy shoe linings. He spoke about the prevalence of selvage holes in the cloth, such as the one shown at Fig. 16, and the generally poor condition of the fabric woven. By dint of questioning I found that he was using a harness cam adapted for fine or light work, but entirely unsuited for such fabrics as were being woven. I happened to know of a similar case, and the remedy was obtained by changing the cams, which were almost round, and replacing them by a cam which gave a quick upward and downward movement to the harness, and which gave a very decided pause to the harness while the shuttle was traveling across the loom.. After this change they had little or no trouble.

An imperfection which occurs with more or less frequency is shown at Fig. 17, and such defects damage the cloth beyond any hope of repair. This generally results from having the builder motion set wrong on the cop or bobbin; a good hard wind rarely acts in this manner, especially where the traverse is not too slow. Whenever such an imperfection occurs, the overseer of weaving should immediately notify the spinner, that the trouble may be remedied.

A somewhat similar imperfection is caused by the presence of extra roving in the filling, causing a very heavy place in the cloth. This cannot be stopped entirely, owing to the fact that sometimes the roving will break on the creel, and, becoming entangled with the next sliver, will pass through the rolls with it, and produce a thick thread. When discovered, the back boys or spinners too often simply break out the extra roping, and leave the coarse thread on the cop or bobbin, instead of unwinding it until they remove all the coarse yarn. Where goods are of such a nature that a thick or thin thread is very objectionable I have known of their using single roving, and arranging their creels so that it was almost impossible for this difficulty to arise.

—The surly dog usually wears a ragged ear.—La Fontaine.

—In this world there are few words and many echoes.—Goethe.

A Worker Among the Workers.

BY A SPEEDER TENDER.

To know the real, genuine textile world one must not confine his attention to the prominent figures in it, to the great merchants and manufacturers whose names are household words, nor to the textile fabrics with which the people are clothed, nor to the complicated and ingenious machines that manipulate the fibres and convert them into useful cloths. To know this interesting world one must meet the mill worker in the mill without whom the mill owner would be helpless, the production of cloth impossible and the mill and machinery worthless junk.

Let me, therefore, introduce my readers to a New England mill, now being refitted and started by new owners of a new class of cotton cloth, and in which a new lot of operatives have been gathered. The mills are situated on either side of a river, and are built of stone, brick and wood. The machinery in part of them is run by water power; this introduces an element of uncertainty into the operation of the works. In the winter the canal freezes, and the mills stop until the ice is cleared. In the spring freshets cause another stop, while in the summer the water is so low that another vacation is necessary. Kerosene lamps are used for lighting the works, and it is a common occurrence to knock your head against one of them, which makes one think of the old tow path days, when the boat men would call "low bridge," and all hands on deck would duck their heads. The machinery, however, is nearly all new, the old machines having been thrown out by the new company.

My first impression on entering the mill was one of astonishment at the immense number of children pouring through the gates to work. In a recent report of the factory inspector of this state, he calls attention to the marked decrease in child labor. I do not question the inspector, but from all appearances there is still a good opportunity for a further decrease. In years to come, these children will take the place of the older mill workers, of whom I am one, and around me now I see the causes of ignorance among the mill operatives of the future.

Two-thirds of the help are either French-Canadian or Polish. The most of the French-Canadians can make themselves understood to English-speaking people: I speak guardedly now, as I do not wish to insult the English language, and so refrain from the direct statement that they can speak English. Very few of the Poles can talk any English at all. The overseer of the card room is a young man who is holding down his first position as foreman. He has the usual amount of theoretical knowledge, and the years to come will improve him and also, let us hope, some of his theories. Of the second hand, I will say that he is the poorest fixer that I ever saw, and I have seen some poor ones in my time, too. The help appear very kind and obliging to one another.

After I had worked about three months in this mill, a man asked me if I was an old maid or a married woman. I enjoyed the laugh, which was certainly at my expense, as much as the rest, but I thought if there is any truth in the reincarnation of the spirit, Li Hung Chang must have evaded the Chinese exclusion act by appearing in the person of this Yankee.

The pay in this room averages $6.50, perhaps $7.00 per week. It is supposed to be reckoned by the piece. No list is shown, as is the custom in most mills where there is piece work. The hanks are taken down once a week and you get your pay once a week. I soon found out that we were not supposed to know enough to watch the clock ourselves.

Most of the great flock of children I have mentioned, work in the spin-

ning room. I wonder if the foreman of that room has a diploma from the kindergarten. Some of the little tots were quite proud of the fact that they could run three or four sides, although one little girl told me that somebody, motioning to a little boy of a looking man the boss weaver was. He replied, "Short, fat man; big chaw terbacker in his mouth."

This was brief, concise and accurate, for I had no difficulty in recognizing the man from the boy's description.

In the weave room a list of the cuts

"WELL, HE AINT FIFTEEN YET, BUT HE SOON WILL BE; HE'S GOIN' AFTER IT."

standing near, was running six sides. I asked how old he was. She replied "Fifteen."

Upon my expressing some doubt, she said, "Well he aint fifteen yet, but he soon will be. He is going after it."

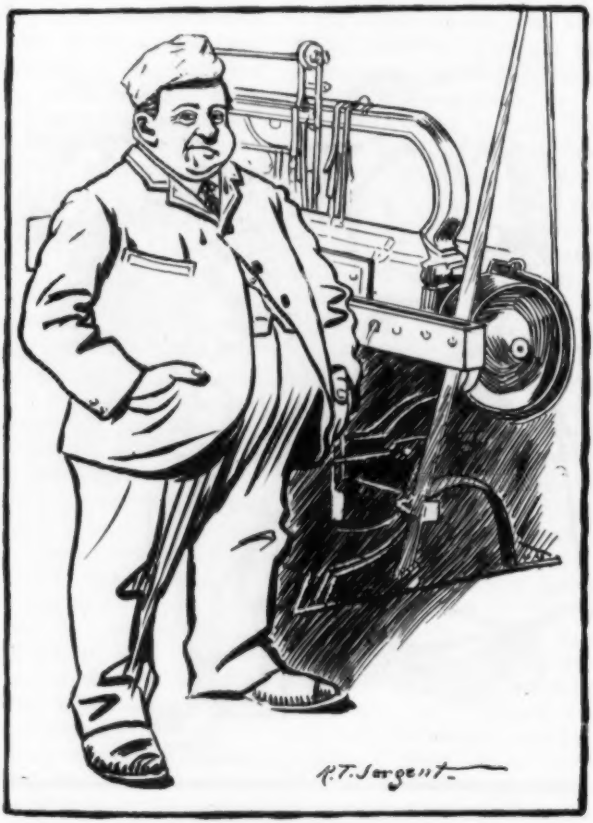
In my opinion it will be two or three years before he gets it.

I was naturally interested in knowing the different overseers by sight, and so asked a little boy what kind taken off by the weavers is shown. Some said that they can earn $8 to $9 per week; others cannot earn more than $6 or $7.

When I first arrived, I asked about the board at the corporation boarding house, and found that one wishing the privilege of a room alone must pay extra. Two tables were set, which again called for an extra to sit at the best table. The tenement houses are let at various prices, the

amount being deducted each week. At the company's store, operatives can get trusted, but as one week's pay is held back, it can be seen that the debts contracted are fully secured, if indeed it may not be said that they are paid in advance. Go to an operative, and ask him about these mills,

Factory life, however, has its bright side if there is a good head to the department. I do not care how strict a boss is, if he is only a gentleman. Some, I am sorry to say, are not. Among the bright spots in the dreary monotony and grind of mill work are the little vacations, a new book, a



"SHORT FAT MAN; BIG CHAW TERBACKER IN HIS MOUTH"

and the chances are, he will tell you that they are "on the bum," and yet there are many men and women who have been working here for years. One woman informed me that she had been here for twenty years. Still there are a great many changes among the help and foremen, one room having had nine bosses inside of eighteen years.

chance to hear good music. These are small things, but are treasured by many of us.

The work is purely mechanical, and the tendency is for the hands to get into a rut in harmony with the steady, monotonous grind of the machinery. Still nature will out, and at the noon hour is often heard someone entertaining a group with a description of

some place, a story or play, and not infrequently with a song. The voices are perhaps untrained, but the audience is not critical and the enjoyment of the music is equal to, if not exceeded, by that obtained listening to some noted prima donna at a cost of $5.00 per ticket.

The Eccles Warp Coiler.

The accompanying illustration, Fig. 1, shows the warp coiler built by James Eccles, 2424 Amber street, Kensington, Philadelphia, Penn. It is claimed that with one boy in attendance this coiler can do the work of three men, and do it better. It lays a fine coil that does not tangle. The construction and operation of the machine is very simple. It consists of a series of tubes, one for each

FIG. 7.

strand of warp. It receives motion from a series of wheels and other pieces of mechanism, giving to the lower end of the tubes and warp a circular and differential circular motion, causing the warp that passes through the tubes to fall on the floor in a series of concentric rings, shown in Fig. 2.

The machine is used on warp dyeing and drying splitting machines, and is very highly esteemed by those having it in use. Among these may be mentioned: R. Greenwood & Bault, G. J. Littlewood & Co., Berkshire Mills, Horrocks & Bros. (2), Harrowgate Dye Works, B. W. Greer, William Wood & Co., Klauder & Bro., all of Philadelphia; Farr Alpaca Company, Holyoke, Mass.; McAden Mills, N. C.; George McFarland & Co., Conshohocken; John Farnum & Co., Lancaster, Pa. (5 coilers); Mississippi Mills, Wesson, Miss., and Aberfoyle

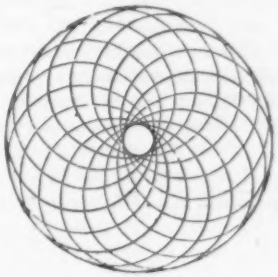


FIG. 2.

Manufacturing Company, Chester, Pa. (2); Rhodes Bros., Aston, Delaware County, Pa.; Hoyle, Harrison & Kaye, Philadelphia; Sibley Manufacturing Co., Augusta, Ga.; J. G. Campbell & Co., Philadelphia, and Bromily & Burus, Philadelphia.

In addition to the coiler, Mr. Eccles builds various types of screw power presses for textile mills, shafting, hangers and pulleys, and pumps for hot or cold water.

The Resetting of Ring-Spinning Spindles.

The necessity of having the spindles of ring frames properly adjusted has claimed the attention of cotton manufacturers since this system first came into use. Ring-spinning under the conditions which prevail in a great many mills is certainly a discouraging process, to say the least. One, we might say the chief cause of trouble is the breakage of threads, which carries with it a long train of evils such as expensive roving made into waste that should go into the yarn. This is well known to every mill man.

To get the best results in spinning, the spindle must be set in line with the traverse of the rings. This means that the spindle should be in the centre of the ring when the latter is at the highest as well as the lowest point in its traverse movement. Some overseers say, "Set them on the top," or, "Split the difference," as they call setting the spindles with the ring rail half way between the top and bottom. This last named method results in the adjustment being correct at neither the top nor the bottom.

Fig 1, shows the spindle set in centre of ring at both the top and bottom points.

Fig 2, shows the position of spindle when set in centre of ring at the half way point. Here the spindle is out both at the top and bottom. It is evident that to overcome this, that a small piece of packing must be inserted under the left side of the spindle base; this will bring the spindle perpendicular, after which the ring must be again adjusted.

Fig 3, shows the effect of setting with the ring rail at the top only; the spindle is in the centre at the top only; as the ring rail descends the spindle gets farther from the centre point.

Spindles that are out of line may at some time have been adjusted correctly; wear and tear have deflected them, and in too many instances the only remedy, resetting, has been neglected. Until these spindles shall again be properly adjusted, the spinning cannot be in the best condition; the production per spindle will be less and there will be more piecing than there should be. Spinners' splicings do not improve the yarn by any means. The work in the spooling as well as all other subsequent processes will suffer as a consequence. Many mills are losing large sums of money every day from this cause; the help in the several departments become discouraged, and yet, by the outlay of a few dollars in resetting the spindles the loss to both mill owner and operative could be avoided.

PARALLEL.

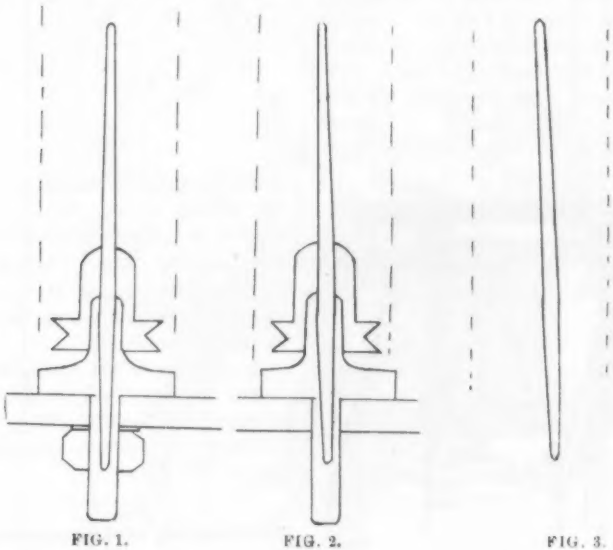


FIG. 1. FIG. 2. FIG. 3.

—Admiration of the modest is based upon love of self.—La Rochefoncauld.

—Indulgence arises by turns from kindness and contempt.—Valtour.

WOOLEN DEPARTMENT.

A Popular Worsted Fabric.

One of the most successful fancy worsted fabrics on the market during the past season is shown in the accompanying illustration. This cloth weighs 16½ ozs. per 6/4 yard and has a close finish. The yarn is of the finest grade and the handle of the goods is soft despite the character of the finish. This line sold readily for $2.25 per 6/4 yard.

In the finished goods there are 79½ two ply worsted warp threads, and 75 two ply filling threads per inch. The size of the black warp as it lies in the goods is equal to 2/27s; the black filling is 2/28s. Both are twisted soft.

The twist in the warp as it lies in the cloth is 2/33 deg., and in the filling the twist is 2/34s. It is twisted hard, having about 23 turns per inch.

Allowance must be made on these sizes for takeup and loss in finishing.

The warp is dressed as follows:

	1	Blue.
	1	Black.
11 x	1	Twist Black and Lavender.
	2	Black.
	1	Twist.
	1	Black.
	2	Twist.
11 x	2	Black.
	1	Twist.
	1	Brown.
	1	Black.
11 x	1	Twist.
	2	Black.
	1	Twist.
	1	Black.
	2	Twist.
11 x	2	Black.
	1	Twist.

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The filling pattern is as follows:

2	Black.
1	Twist.

3

The soft twist of the black yarn and hard twist of the black and lavender yarn make the difference in size more apparent than real and subdues the lavender in the goods.

The weave shown at Fig. 2 is a six leaf twill reversed at the end of each 18 warp threads.

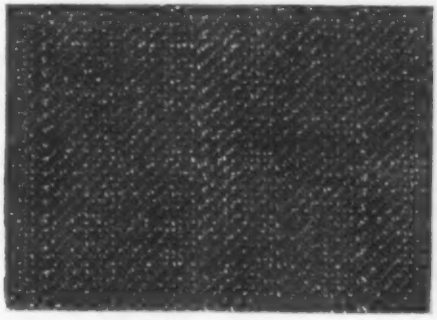


FIG. 1.

FIG. 2.

This fabric is one of the best on the market, and at 2.25 per yard is a good example of the present state of the market for fine worsteds.

—Owing to the continued depression in the linen industry, French manufacturers have decided to continue the shut down of one day per week, which has been in force since last November. In spite of the reduced production since that time, trade shows no signs of improvement.

Finishing Wool and Mixed Fabrics.

XII.

BY N. REISER.

(Translated from the German for the Textile World.

Continued from February.

(Copyright, 1901, by Guild & Lord.)

In addition to wool, many kinds of waste woolen products furnish raw material for woolen cloth. The bulk consists of picked stock from yarn waste, woven cloth, soft finished and hard fulled cloth; the last named is called mungo.

They may be classed as follows: 1, light colored or white; 2, dark colored; 3, made from materials of which wool substitutes formed a part; 4, containing a percentage of cotton or silk; 5, all cotton waste or shoddy.

The stock may be carbonized or uncarbonized. The fulling quality of these products vary greatly. The best fulling stock is obtained from light colored yarn waste; then come light colored cloths that have not been fulled, and finally such materials as have not been carbonized or, at least not injured by that process. Cloth made from short stock fulls best in the hammer stocks, as less friction and, consequently, less chafing is caused by this machine.

Wool can be injured in the washing process by the use of too strong or too hot alkali liquor or by rinsing the goods for too long a time; in carbonizing, by too strong acid, leaving the goods too long in wet acid, too high a temperature in drying, leaving the cloth too long in the dry room, or by delay in removing acid after drying.

The fibre is injured in the dyeing process, and the finish of the goods thereby impaired by too strong chemicals, redyeing "misfit" colors, crowding too much wool in the tub, or by throwing the hot wool from the dye tub in piles on the floor.

The mixing of different fibres has an important influence upon the fulling qualities of the stock. A long smooth wool should not be mixed with a short fibre, neither should very fine wool be mixed with coarse wool.

Wool is in the best condition for fulling when it comes from the card. Twist, however, must be given to the yarn; the more twist the yarn contains, the less easily will it full, as twist prevents the free movement of the individual fibres. The finer the yarn, the more twist must be given to it to obtain the necessary strength and the less number of fibres lie side by side, consequently, goods made with fine yarn full harder than those made with coarse yarn. Conversely, the coarser the yarn, the less twist is required, and, consequently, the quicker the goods will full.

The texture of the goods also has an important influence upon the fulling process. If the fibre is too loosely set it will shrink in width so rapidly that sufficient time will not be allowed for felting of the fibre; as already explained in a previous chapter, the shrinkage and felting of the cloth are two very different things.

On the other hand, if the fabric is too closely set, the shrinkage of the cloth is prevented, owing to the fact that the threads cannot be brought closer than they already are; in some cases this difficulty is so pronounced as to prevent getting the goods down to the required width. Under such circumstances the trouble may be lessened by the use of better and more soap and a higher temperature in the fulling process. Prolonged fulling of goods, with a very close texture, results in the face being felted more than the centre, as the fibres in the centre are so firmly held in place that they cannot be moved by the felting process. It frequently happens that goods containing shoddy will full easily at first, and after a while reach a point where no further progress is made. Such a difficulty can be reme-

died at times by washing and drying the goods, and then resuming the fulling.

An attempt to full very low shoddy stock will at times result in an actual increase of width, instead of a shrinkage. There is no remedy for this condition.

The weave or method of interlacing the threads also has much influence upon the fulling of cloth. By frequent interlacing of the threads with each other, the free movement of the fibres in fulling is hindered. This can be readily understood by an inspection of figure 34. In fabric, A, the warp threads, a and b, pass alternately below and above each filling thread. The fibres in yarn so woven cannot move easily in fulling, especially those in the warp yarn, which

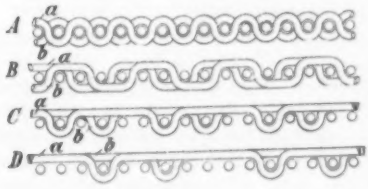


FIG. 34.

rises and falls as shown in the illustration. The movement of the fibres will be somewhat easier in the cross or filling threads, as they are not deflected so much in the cloth. The weave of A is a so-called cotton or plain weave, and it is well known that goods so woven full harder than with any other weave.

B represents a weave with the warp floating over and under twice as many threads as in A; in reality, the length of the float in B is three times that in A, since the warp threads pass without deflection not only over the two filling threads, but also over the space between these two threads. Cloth woven as shown at B will shrink more rapidly in fulling, although the texture may be much closer than that A; this is because greater portions of the threads and fibres lie parallel with each other and permit of an easy movement of the fibres.

C represents a weave in which each of the warp threads, a and b, float alternately over four filling threads. Here we have four picks and three spaces between the picks for the float on the face. D represents a weave in which each warp thread passes alternately over seven and under one filling thread. Goods made in this way will be still more easily shrunk in fulling.

The fulling process is facilitated by squeezing, beating, kneading and pressing. These mechanical operations facilitate the movement of the moist fibres. This fact is illustrated not only in the fulling mill, but in the shrinkage of woolen clothes by washing and rubbing in the laundry. It is impossible to shrink goods without moisture. The writer has proved this by rubbing between the hands for thirty minutes a piece of cloth made of Australian wool and woven with a four leaf twill. The sample had previously been washed. No perceptible shrinkage took place. The natural moisture of wool, about 17 per cent. of the weight, is not alone sufficient to induce fulling of the fibres when rubbed.

The water and soap used in fulling serves a double purpose:—1. To start the oil, fat or other impurities. 2. To lubricate the fibres. If the fibres are not sufficiently lubricated, the friction of the fulling mill causes an excessive waste or chafing of the goods. When the wool fibres are deprived of their natural fat by alkali, they become more or less dry and rough, and in this condition do not easily slide on each other.

The writer made another test with woolen cloth made of yarn containing 8 per cent. red oil and some soap. One month after the goods were woven a sample was rubbed by hand for thirty minutes (about 4,100 times); the shrinkage was 5 71-100 per cent. This shrinkage was due to the presence of

the oil and soap, since the water had entirely evaporated.

Heat facilitates the fulling process by making the fibres softer and more pliable. Heat is caused by the friction of the fulling process; consequently the temperature is raised by increasing speed of machine, keeping the mill closed tightly, increasing the weight of the cloth or shortening the length of the string. Steam and hot water are sometimes used to facilitate the fulling. They should be employed only on gray goods, since too high a temperature injures colors. For this reason care should be exercised in fulling all dyed cloth.

Strong alkalies are even more injurious to cloth in the fulling than in the washing process, since the temperature of the former is higher; consequently, neutral or but slightly alkaline soaps are generally used for fulling. Too much soap, or a soap that is too heavy, retards fulling.

Experiments have recently been made in fulling wool with sulphuric and acetic acids. The process has not, however, been adopted to any extent.

The following tables give the results of experiments made to determine the fulling qualities of different classes of wool, under different conditions, such as with water, fuller's earth, soap and sulphuric acid:

the use of this material. The first and second tables are interesting, as showing that alkalies and fats are not essential to the fulling process. All the cloth used had previously been scoured. The cloths, with the exception of the raw material, were identical.

It will be seen from these tables that water is better than fuller's earth for fulling, particularly in the case of Cape and Buenos Ayres wool. In fulling with soap Cape and Sidney wool shrunk the same, as shown by

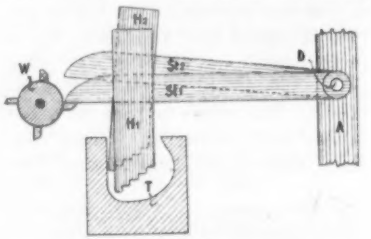


FIG. 35.

table 3. This was practically the case when acid was used; in all cases Buenos Ayres wool shrunk the least. This last named wool was not carbonized, and consequently its natural fulling properties had not been impaired. The tests were made in the same fulling mill and under the same conditions.

The interesting fact is established by these experiments that cloth made

FULLING TESTS FOR TWO HOURS.

	Cape Wool. % Shrinkage.				Buenos Ayres Wool. % Shrinkage.				Sydney Wool. % Shrinkage.			
Fulling Material.	After Fulling.		After Washing.		After Fulling.		After Washing.		After Fulling.		After Washing.	
	Lgth	Wdth	Lgth	Wdth	Lgth	Wdth	Lgth	Wdth	Lgth	Wdth	Lgth	Wdth
Water	6.4	4 9	4.5	8.3	1.5	2.1	1	4.2	5.9	9	4.7	9
Fuller's Earth	4.9	1.4	1.5	2.1	3.5	....	2.5	1.4	5.4	8.3	4.1	8.3
Soap	14.9	9 7	8.9	11 1	13.3	6.2	11.4	6.9	30	11.1	29	11.1
Sulphuric Acid	21.2	16.7	16.7	18.1	17.2	12.5	15.3	13.9	20	22 2	18	22.2

Sidney wool shrunk more than Cape wool and less than Buenos Ayres wool. The felt of Cape wool is not so compact as that of Sidney, but is superior to that of the Buenos Ayres wool. The greatest shrinkage was obtained with the acid. Acetic acid only is used for wool dyed goods, but the writer's experiments did not include

of Sidney wool held its width better during the washing process, while in this respect the other wools varied widely.

White stock fulls the best; next come light colors. Brown and black impair the fulling qualities of wool more than other dyes.

The soap should be applied slowly

and carefully in the fulling mill to obtain a uniform saturation of the pieces. The cloth should be frequently examined during the fulling to see that the moisture and heat are right.

The appearance of wrinkles and streaks in the cloth is the principal difficulty in this process. They are caused in various ways: 1, Running

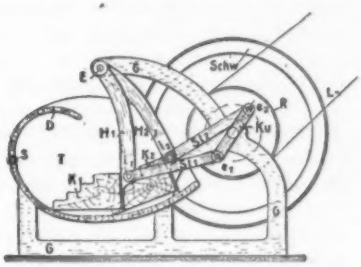


Fig. 36.

too long without overhauling the pieces so as to form them in new folds. 2, Fulling too dry. 3, Rolling selvages. 4, The folds of the cloth getting caught between the roll and flanges. 5, Too great a width in the loom, thus extending the time of fulling. 6, Too great a pressure of the rolls. 7, Shrinkage in width only,

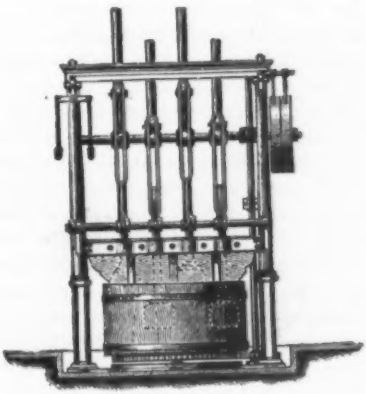


Fig. 37.

while length remains the same. 8, Uneven seams. 9, A soap that is too heavy or thick.

Fulling Machinery.—Woolen cloth has been fulled from time immemorial. At first the cloth was pounded in tubs, either with wooden beetles or the bare feet. In olden times the weaver, when he had cloth to full,

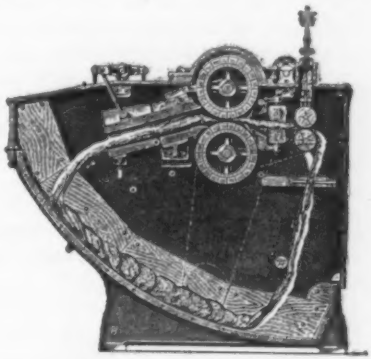


Fig. 38

called the boys and girls of the neighborhood together and induced them to dance with bare feet upon the cloth, to which soap and water had previously been applied, thus combining business with pleasure. The mechanical principle of this ancient process is still retained in the hammer and rotary mills of today.

In the hammer or falling stocks the cloth is placed in a trough and by means of cams or cranks hammers are raised and then dropped upon the goods. A hammer mill with the hammers operated by cams is shown at Fig. 35, while Fig. 36 shows the beater moved by cranks. Fig. 37 gives a view of a stamp fulling mill made by the Zittauer Machine Co. This style of fulling mill is at present used chiefly for overcoating fabrics that are easily wrinkled in fulling, for tricots and similar goods.

Strange to say, it was not until some time between 1820 and 1830 that cloth was fulled by means of revolving rolls. An Englishman, named Diser, was the first to use this method. This style of fulling mill has one lower and either one or more upper rolls.

A cross section of a mill with one upper roll is shown at Fig. 38. The guide rack is hinged at the left; if the cloth should get caught, this rack

rises and operates a motion that stops the machine.

The cloth next passes between two horizontal wood rolls. The pressure of these rolls causes a tension by which the shrinkage in width can be regulated. The piece then passes between two upright adjustable rolls, that serve a similar purpose as the first two, and then through the main rollers.

The pressure of the upper roll is increased and regulated by springs. From the main rolls the goods pass

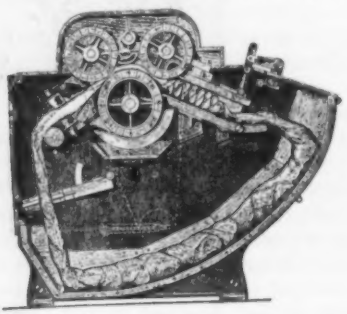


Fig. 39.

to the crimping box. The top is adjustable and the pressure is regulated by weights or springs. This box prevents the free exit of the cloth from the box and causes a shrinkage in length. Fig. 39 shows a mill with two upper rolls. In other respects the construction is similar to that at Fig. 38; the first pair of small rolls is, however, omitted. The attachment above the cloth and between the two upper rolls is for stopping the machine in case the cloth becomes clogged at this point. The box under the rolls is used when the machine is employed as a washer, in which case the crimping box is removed.

Various machines have been built for fulling thick fabrics in the open width, but have not been successful. The same may be said of attempts to combine the rotary and hammer principles in one machine. Such a combination would certainly be advantageous, as it would do much to prevent mill wrinkles.

In addition to mill wrinkles, holes and rips in the cloth are often caused in fulling. Owing to the violent and rapid movement of the pieces a very slight obstruction will tear the fabric. All parts of the machine should be accurately adjusted, and hard substances kept out of the mill. A tack, small stone or pin in the fulling mill will ruin a set of pieces in a very short time.

Mildew in Woolen Cloth.

The formation of mildew in woolen goods, as in those of cotton, is due to the development of fungoid growths in the presence of air and moisture at a certain temperature. The most favorable time for the appearance of these fungi is in summer, and especially in the month of August they occur very frequently.

Certain dyes, like vat blue, are particularly liable to this growth, probably on account of the alkaline reaction of the dye liquors. The danger can only be avoided by not allowing the goods to lie in a heap for any considerable length of time.

One of the primary causes of mildew can frequently be observed in the process of weaving moist cloth. Two different kinds of fungi may appear at this stage, according as to whether the fabrics remain cold or become hot. In the first place the fibre is not attacked or disintegrated, and the fungoid growth also often extends over a considerable area. Dark shades are hardly ever affected. The mildew can easily be brushed off. Much more serious is the second kind, which appears in the form of smaller or larger patches, generally disintegrating the fibre. Mildew stains of this kind show after the milling as bare patches, and the fibre appears quite rotten.

The same stains are often caused through the cloth, after the milling, being left to lie unwashed. Undoubtedly the highly alkaline reaction of the cloth at this stage is very favor-

able to the growth of the fungus.—Farber Zeitung.

Waste in the Weave Room.

ELMO

The yarn made into waste in the weave room is a very large item, and frequently underestimated by mill men. The manufacturer who realizes that it is "the little foxes that spoil the vines," and is ever on the alert regarding the possibility of small leakages, is the one who is the most likely to succeed, other things being equal.

There are several reasons why the waste question in this department is of greater importance than that pertaining to the other parts of the mill. As compared with any department handling the stock before it reaches the weave room, its importance is increased on account of the value of the yarn from which it is produced. It represents both the stock and the cost of the production, as it will be plainly seen, that the farther advanced the stock may be toward the completion of the fabric, the more valuable it becomes, because of the labor cost added to it.

Another reason is on account of the depreciation in its value when it once becomes a part of the waste accumulation; and thirdly, because of the fact that the quantity is frequently larger than it need be, and the self-interest of the weaver tends to its accumulation.

I wonder how many weavers ever stop to think, when they are pulling fine worsted yarn from a bobbin, in changing shuttles, that the yarn thus turned into waste is decreased in value fully 70 per cent.!

And how many are ever taught by the management of the room that this is the case?

The manufacturer thinks himself fortunate if he can count on a 10 per cent. profit on his goods, and yet he is obliged to suffer a depreciation of good stock to the extent above stated. Stock, that when made into yarn, stands at the value of 54 to 55 cents per pound, when thrown into waste accumulation will scarcely sell for 15 cents, which is less than 29 per cent. of its former value.

Of course, a certain quantity of waste is unavoidable, and is a part of the expense which comes into the calculations of the manufacturer in figuring the cost of his goods; but that it often exceeds what it should amount to, and frequently far exceeds the manufacturer's calculations, is a fact, and how to keep the quantity within reasonable bounds is an important question.

Unlike the card room waste, which is largely composed of droppings of much dead or poor stock of inferior value, the waste made at the loom is equal in quality to the stock that remains in the fabric; and any waste aside from that which is legitimately necessary, is a direct drainage upon the resources of the mill.

The principal part of such waste comes directly from the filling bobbin, taken off by the weaver when he changes shuttles. His lack of care to allow the bobbin to run as nearly empty as possible and his practice of changing two or three shuttles at one stopping of the loom, when perhaps only one is sufficiently run out, as well as his desire to avoid the trouble occasioned by the yarn running entirely off the bobbin lead continually to abuse in this matter.

The weaver, being paid by the piece, loses nothing and finds it for his own interest to stop his loom as little as possible, and to take no chances of the bobbins' running empty, so that there is a constant tendency to an undue production of waste which should be met by some system of prevention.

Though the weaver is often blamed, it is doubtful if he is wholly responsible. He has his own interests in view, and if the restrictions and regulations of the room fail to check him, he very naturally drifts into the habit

which proves to his own advantage, without a serious thought regarding its consequences upon his employer.

In fact he has failed to be impressed with the importance of the other side of the question. If the overseer of the room is slack regarding the matter, it cannot be expected that the common help are going to trouble themselves about it.

In the writer's experience, both as superintendent and owner, he cannot recall a boss weaver who appeared to realize the full importance of this question. It is too often the case that the overseer considers his duties to be confined to the quantity and quality of the production, and overlooks some other matters that pertain to their employer's interests; and while they are holding down a stool, with the satisfaction of a good showing down through the scuttle to the finishing room, they fail to see Tom, Dick and Harry reeling off from each bobbin, yarn sufficient for six or eight picks, in order to get in a full set, so that they too can imitate the boss's example of ease and restfulness.

With the fact evident that the overseer must meet this evil and correct it, the question arises, how can it best be done?

Some mills have tried the method of limiting the amount allowable to a specified number of pounds, and imposing a fine for all exceeding that amount, weighing each weaver's waste weekly, and fining accordingly. This has often led to a disposition of the overplus that should have been charged to the dishonest weavers, in a strange and mysterious manner, and fragments of it have been found hanging to the rocks and bushes down the stream.

This fining method is apt to operate unjustly, in that it often falls most heavily upon the honest weaver who may have "bad work," thus laying a burden upon the very one who is entitled to some consideration.

We are strongly of the opinion that the only just and successful way to govern this matter is for the overseer to "nip it in the bud," by keeping a close watch of his weavers, and instead of judging from the quantity of waste gathered up, let him correct the weaver when he finds him in the act of pulling the yarn from the bobbin, and at the same time strive to impress him with the result of his evil practice.

To become familiar with the weekly production of the individual weavers is all right, but when the weaver is corrected right in the act and learns that he is constantly under the eye of the overseer, no excuses or hiding of the waste will cover up his guilt, and when he is held to as strict account in this matter as he is in the perfection of his cloth, he will soon form habits that will result in a large decrease in the aggregate of waste in the weave room.

Aside from the yarn taken off the bobbin when the shuttles are changed, the weaver often has "soft bobbins" that are an excuse for the production of waste, and while some of them may offer valid reasons for the weavers rejecting them, they should not be allowed to pull them off and consign them to the waste, but should be required to lay them aside for inspection, so that other similar work may be avoided, and that by a system of rewinding the bad bobbins may be made to serve their purpose, instead of going into the waste.

All such defective work has its origin in other departments of the mill, and if added to the waste, the trouble is likely to continue instead of being at once corrected.

To sum up the whole matter, we may say that everything depends upon the discipline of the room.

The overseer who is looking out for his employer's interests, will consider every point of economy, and run his room, as though it were his own.

KNITTING DEPARTMENT

The Knit Goods Situation.

The past month has been a fairly busy one on lines of heavy weight underwear for fall of 1902, but considerable business will still have to be booked before the situation can be called entirely satisfactory.

Last spring buyers were more than usually conservative in placing orders for fall delivery, principally on account of their having carried over fair sized stocks from the preceding season; but this year such cannot be said to be the case for stocks in the hands of both retailers and jobbers are unusually light. It is possible that jobbers may be holding back on their fall purchases with the expectation of getting better prices later in the season, but it is not at all likely that prices will go below their present level.

Manufacturers of children's ribbed goods, as a rule, have their season's production fully placed, but such is not the case with manufacturers of ladies' ribbed goods or men's fleeces. Last month's quotation on fleeces still hold good with the exception of a shading of a few cents here and there on large sized orders; for instance, some lines quoted at $3.25 have been bought at $3.17½ and the $3.50 garments have been sold as low as $3.40 where liberal quantities were taken. One line has been offered in the market at $2.87½ but the weight was only 12 lbs. and the trimmings were very inferior. Still a lower grade weighing 9 lbs. was offered at $2.50 and a large amount of business was booked at this price.

In ladies' heavy weight vests and pants, some good values have been offered in 8 to 8½ lb. goods at from $1.85 to $1.95 per dozen, and $2.00 on extra sizes. It is a very noticeable fact that in this class of goods, tuck stitches have been the best sellers in the West, while the plain stitch garment has been the more popular one in the East.

Considerable business has been booked in the Far West on a line of ladies' heavy weight fleeced goods, both in vests and pants and also in combination suits, but these goods are not looked upon with favor in the East on account of their not being adapted to our milder climate and more open winters.

Prices on spring underwear are firm and the jobbers are sending in duplicate orders in larger volume than can be properly taken care of by the mills. An excellent retail season is looked forward to, and from the present outlook there is likely to be a scarcity of desirable goods before the season is over.

Manufacturers of golf vests are already booking large orders for fall and are even now making deliveries to meet the demands of the retail trade for immediate consumption.

Knit shawls will also occupy a prominent place in the lines of fancy knit goods for the coming season and present indications are that the "umbrella shawl" of Shetland Floss will be in even greater demand than during last season.

At the present writing there is every indication that the business on fall hosiery will be more than usually satisfactory. The retailing of spring lines has already commenced, and it is safe to predict that a phenomenally large business will be done on ladies' fancy hose of every description, with lace effects strong in the lead. In the line of ladies' hose, the popular demand seems to be for white grounds with black patterns, the favorites being lace effects and neat scroll designs.

Polka dots are not in good demand.

although it is predicted that they will be revived for the fall season. It is surprising the number and variety of novelties that are being shown in the way of fancy half hose for men's wear. Open work effects are the favorites and are freely ordered by buyers from all parts of the country.

Fig. 1 illustrates a high grade fancy half hose brought out by a prominent importer to job at $6.50 per dozen. This is an open work lace

Fig 1.

effect in vertical stripes with intervening embroidered stripes, about which are grouped at intervals of an inch a series of circular designs embroidered in white.

One of the extreme novelties of the season is a mitten with an embroidered design with the leaves and stock of the flower embroidered in green silk, while the bud is of painted and embroidered felt, fastened with silk thread. It is a very unusual pattern, but has been favorably received by sellers of high class men's furnishing goods.

The Chemnitz hosiery market is more than usually active and duplicates on spring orders are pouring in freely. Heavy shipments are being made each week, and manufacturers are sold up many months in advance. No stocks whatever of lace goods are accumulating, consequently prices will remain firm and no changes are looked for. In the higher priced goods, jacquards are freely purchased, but the favorites still are lace and embroidered effects. Manufacturers of knit gloves have more orders booked for next season than they have ever before known at this season of the year and as a result of this prosperity prices have been advanced from 5 to 7 per cent. The demand is mostly for plain colors, although fancies are not by any means discarded from the line.

Reproducing Hosiery from a Sample.

A sample pair of the goods having been obtained, the first thing to be determined is the weight. After weighing, one of the stockings is dissected. Start at the toe, after the stocking has been turned inside out, and remove with a fine needle the looping thread, which can be easily taken out if started at the left ridge, or seam.

The rows unraveled should be counted carefully, and after about five have been unwound an extra or reinforcing thread will be found, which has been introduced to make the toe a trifle heavier than the leg. As the two threads are pulled out, 120 yards of each should be measured and weighed, to determine the sizes. The rows unraveled at the same time should be counted, and the weight of the 120 yards secured will give the size of each yarn. The next thing is to determine the size of the yarn used in the cuff or top of the stocking. This is done in the manner already described.

A practical knowledge of hosiery

manufacturing is necessary in duplicating a sample, and experience is required to determine whether Egyptian, Peeler, Sea Island, or Southern cotton yarn has been used, and by what process the goods have been dyed. If colored by the oxydizing process the material has a salty taste when applied to the tongue; when by the diazotized and developed colors it has a sweet taste.

When duplicating lace effects, etc, the procedure is the same, except that the position and arrangement of the stitches must be carefully noted.

CIRCULAR.

Troubles of a Knitter.

When manufacturing one gauge of goods, say 24 in., it is often desired to change to another size, for example 36 inch. The change is frequently attempted by taking out the dial and cylinder and substituting another size. If there is not a 36-in. dial on hand, the knitter measures the cylinder cam ring, and a cylinder is ordered to fit it; then he measures the spindle bore in the dial and directs the machine builder to make the new dial accordingly. If it is not the right diameter when received and is cut like the old 24-in. dial, there will be trouble simply because the old dial had become worn out and filed down by the knitter to prevent the sharp dial slots from cutting holes in the goods.

I find that some machines are so complicated and made of such poor material that many difficulties present themselves in operating them. It does seem at times as if the poor work was intended as a means of bringing orders to the machine shop for repairs.

I have seen first class knitters hunting around knitting machines to find the reason why stitches were being dropped, when the real cause was nothing more or less than electricity in the latches of the needles. At times I have touched the needles with the end of a screw driver and the latches adhered to the tool by reason of the electricity.

BOHNEN.

Hosiery in China.

Light is thrown on the Chinese market for textiles by a report from the U. S. consul at Hong Kong. He says:

"American exporters should bear in mind that the Chinese market, for manufactured articles especially, is entirely different from the markets of other parts of the world. There is not, at present, a wide range of manufactured articles that are likely to sell well in China, but there is evidence of the gradual introduction of foreign goods in considerable quantities. For instance, cotton socks and rubber shoes meet with a ready sale in this district. There has been a growing demand for both these articles in recent years, and they are coming to be regarded as necessities.

"The poorer classes in southern China have in the past worn nothing on their feet and most of them still go barefooted. There is, however, an increasing tendency to wear cotton socks and rubber shoes, which is likely to cause a large demand for both articles in the future. They are now supplied by English and German manufacturers, principally the latter.

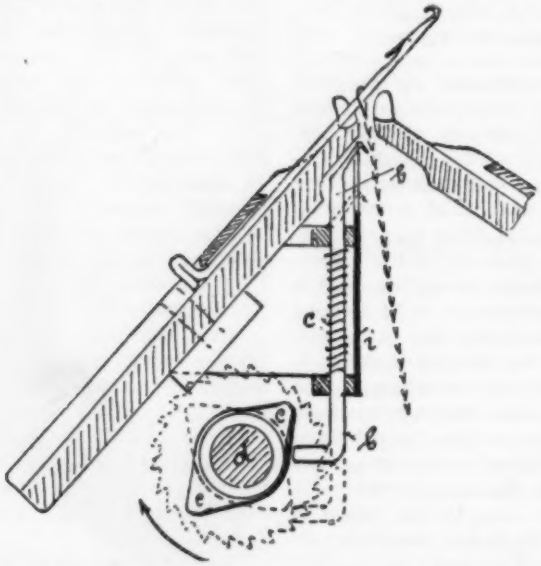
"The socks are made of white cotton, and cheap grades are mostly used. They sell at about $1 Mexican per dozen, or about 4 cents per pair in United States currency. This is the wholesale price. The qualities worn by the middle class of Chinese sell at from $4 to $5 Mexican (about $1.80 to $2.25 gold) per dozen. Lisle-thread socks bring from $7 to $8 ($3.15 to $3.60 gold) per dozen.

"There will be an almost unlimited market for the sale of cotton socks in China as they come to be more and more worn, and American manufacturers should compete for a share of

this trade. At present, however, it would appear that they do not even desire to supply the demands of the Chinese in the United States, for it is a fact that white cotton socks made in Germany are occasionally exported from Hongkong to San Francisco for the Chinese residents of that city."

Takeup Device for Flat Knitting Machines.

A take up device, shown in the accompanying illustration, has been recently invented in Saxony.



The goods are taken up by means of separate hooked needles, c, which are adjusted in a stationary guide set on the frame of the machine.

A cam, e, on the shaft, d, presses the take up hooks down, and at each passage of this cam, the spiral spring c, throws the hooks upwards, where they again catch the goods and are moved downwards at the next passage of the cam.

This take up is made conditional by reason of the cam, e, being loose on the shaft, d, and held by a spring connected with a ratchet.

When the knitting needles are out of action the pressure of the hooks, b, overcomes the spring and holds the cam stationary until new stitches have been formed and the tension of the fabric relieved.

The points of the hooks, b, project through slits in a plate, i, so that only a small portion of the points penetrate the cloth.

A Knitting Machine Without Needles.

A German has invented a knitting machine in which the fabric is formed by two spiral yarn carriers, f and g, Figs 1 and 2, on which the rows of loops are moved toward end by the revolution of the spiral.

Just before the loop falls from the end of the spiral, g, an oscillating thread guide, e, passes through the loop, and forms a new loop, c, which, after the return of the guide, together with the loop, b, hangs on the spiral, f, and is gradually pushed forward. As in hand knitting the work proceeds from needle to needle, so here it is carried on from spiral to spiral.

From the loop, a, Fig. 2, the thread passes in the direction indicated

by the arrow through the loop, b, which is about to fall from the spiral, g. The thread then passes to the front side of the guide, e, through the eye to the back side and finally to the spool. This method of threading causes the thread to cross in the loop. Fig. 11 represents a row of stitches, and the crossing of the thread is clearly indicated.

The thread guide enters the loop, and forms a new loop, c, when then is taken from the end of the spiral, f.

—No trouble is unbearable, except our own.—Chamfort.

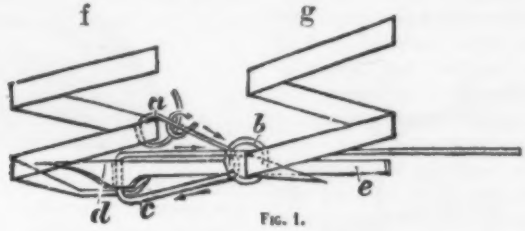


Fig. 1.

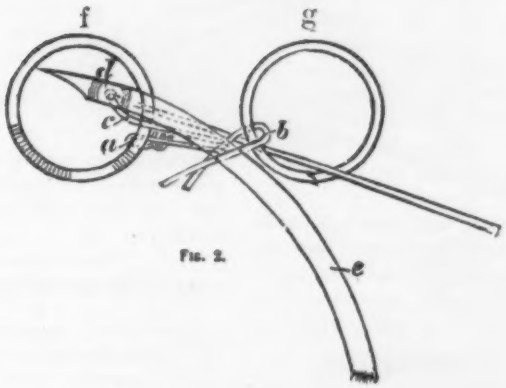


Fig. 2.

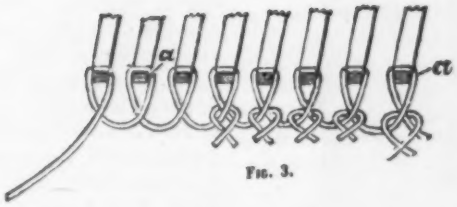


Fig. 3.

Notes from the Chemnitz Market.

But slight change has been noticed in the market for hosiery. A confident feeling is found in most branches of the knit goods trade here.

To be sure, complaint is heard as to the narrow margin between cost and selling price, but this song has always been sung, and always will be heard as long as men do business with each other. The margin of profit on hosiery is as a matter of course but very small and manufacturers should take that fact into account. In cases where the business

has resulted in a loss, the sufferer should look for the cause elsewhere than in general trade conditions.

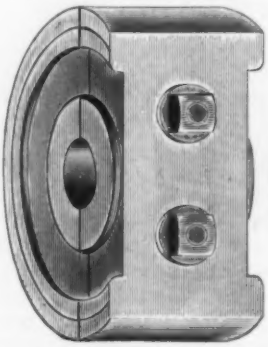
The large stocks of goods found earlier in the season have disappeared and deliveries for the approaching season are covered by contracts up to the end of May.

This season's orders for lace and fancy hosiery have exceeded both in volume and number the phenomenally large business of last year. The activity in woolen hosiery is also a feature of today's market.

The export business in gloves is good, but, as an offset to this, the unusually mild winter throughout Europe has cut into home trade in this line of goods and caused a decided loss. Summer weight gloves are fairly active and the trade is hoping for favorable weather during the spring season.

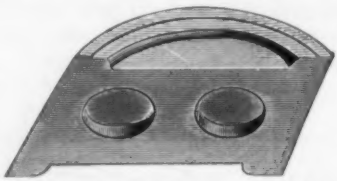
A Wood Split Pulley.

In every mill, and especially knitting mills, there is frequent occasion for setting pulleys on the shafting or moving those already in position. To meet the need for a pulley that can



be easily applied and removed, A. W. Hoag & Co., 238 Walnut street, Reading, Pa., have designed the one shown in the accompanying illustration. Fig. 1 shows the pulley with a section, Fig. 2, detached. The two bolts, of which the heads are visible in Fig. 1, serve to clamp the pulley on the shaft, and by a peculiar construction a very high pressure is secured, which keeps the pulley in position under all ordinary strains to which it may be subjected.

These pulleys are made in standard sizes of 1 inch to 7 inch face, and 3



inch to 9 inch diameter. Larger sizes are made if required.

In addition to this wood pulley, Messrs. Hoag & Co. handle a full line of shafting, couplings, hangers, pulleys, belting, oxydizing tanks, stocking boards, etc. They invite correspondence with parties interested in these lines, and are confident that their facilities enable them to deliver goods which, as regards quality and low cost, will equal any now on the market.

A Tension Device for Knitting Machines.

This device, recently patented in the United States, is adapted for circular machines, and the inventor claims that with it the web can be drawn uniformly from the needles, and the difficulties resulting from uneven tension avoided.

Fig. 1 is a perspective view of the device; Fig. 2 is a plan. On the base, or foot, is pivotally carried the tension frame, which comprises two parallel side bars rigidly connected by a cross piece. This frame is mounted on the foot to move freely on a horizontal axis and is sustained in an approximately horizontal position by a belt (see Fig. 2), which is driven from the shaft of the knitting machine.

The belt passes around a grooved pulley, located outside of the frame of the machine. This pulley is fast on a shaft, which is mounted to turn loosely in the tension frame. The

belt serves not only to rotate the shaft in time with the movement of the other parts of the machine, but also to support the tension frame and its parts in proper position.

Mounted in the side bars of the tension frame are fluted rollers, between which the web of knit goods passes. These rollers are geared with each other by pinions, fast on the respective axes of rollers and meshing with each other; the rollers are driven from the shaft by means of gears, one being fast on the shaft and the other gear being fast on the axis of the adjacent roller.

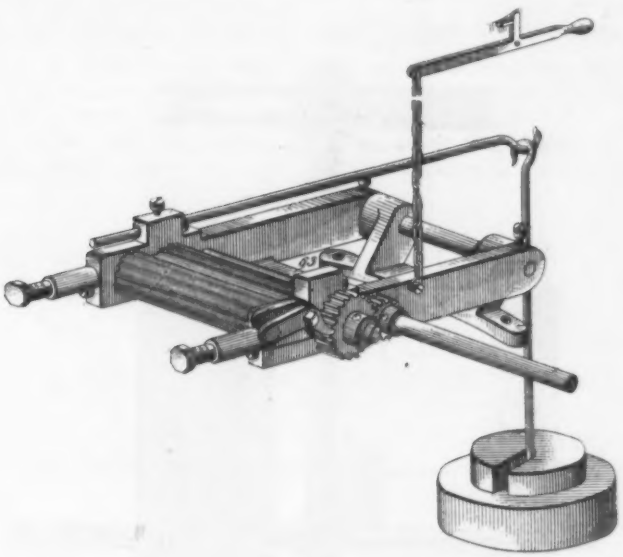


Fig. 1.

For preventing back movement of the rollers two pawls are provided, which are pivoted on the side bar that is adjacent to the gear and which engage said gear. The pawls are of different lengths, as indicated in Fig. 1, so that they will engage with different teeth of the gear.

The weight of this tension device is communicated to the web, and it is this weight which draws the web from the needles.

For regulating the force which is applied to the web a weight is provided, which is hung by a rod on the end of an arm that crosses the axis of the tension frame, i. e. the foot, and is fastened to the tension device near the free end.

This fastening is made by a box, through which the arm passes, and a set-screw, carried in the box and engaging the arm. Since the force of this weight is applied to the tension frame at the side of its pivot opposite the side carrying the rollers, it will be seen that the weight counteracts the weight of the tension frame, and the force that is applied to the web is thus regulated. This may be effected either by increasing or diminishing the weight or by adjusting the arm in the box, preferably the latter, as the most convenient.

When it is desired to lift up a tension device and relieve the web of the strain, the attendant may throw down a lever, which is mounted suitably on the framing of the machine, as indicated in Fig. 1, at a point above the tension device and connected by a chain.

The inventor states that this tension device is regular and sure in its operation, subjecting the web to a uniform strain and causing it to be drawn uniformly from the needles, thus producing regular and accurate work. In knitting machines it is of great importance that the web be regularly drawn from the needles, since it is only in this way that good work can be obtained.

The weight of the tension frame being suspended on the belt causes the latter to engage firmly with the pulley. When the tension device bears too forcibly on the web, the tension device will tend to climb up the web, owing to the action of the rollers; this relieves the strain on the belt, and consequently the rollers are not driven so fast. The tension device is thus to a great extent self-regulating.

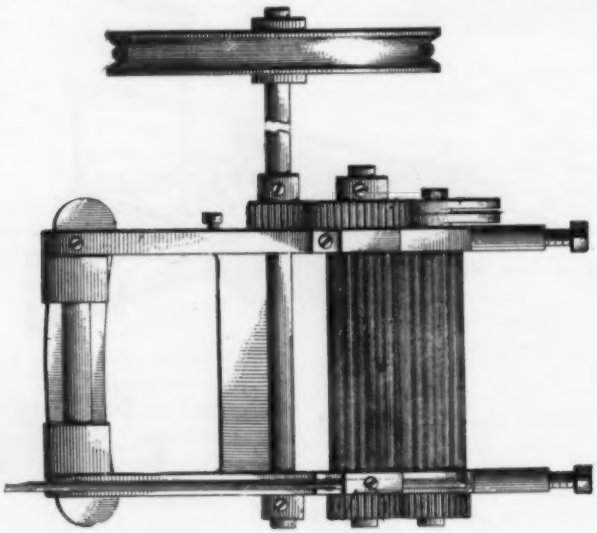


Fig. 2.

—Ramie is being used extensively in Europe as a substitute for linen. In some cases it has been sold as linen and the courts have been called upon to prevent the practice.

—Obey, if you desire to be obeyed.—Voltaire.

—The shrinkage in the natural indigo industry is well shown by the Indian government report for 1901. The area inspected last season was but 71,600 acres as compared with 115,700 acres in 1900, a decrease of over 38 per cent. The yield of dye for 1901 is estimated at 808 tons, as compared with 1235 tons in the preceding year. The decline is ascribed in great measure to the fall in price of the dye which in turn has been brought about by the use of the artificial dye.

—A patent has been issued in this country for a sheeting fabric woven with a graduated reed by which the greatest density of the warp threads is in the centre of the fabric where the most wear comes. From the centre sideways in either direction the set of the reed becomes gradually coarser until the selvage is reached.

—A little of everything, an excess of nothing,—great means of being moderate, wise and contented.—Joubert.

—What avails the opportunity, if it finds us unprepared.—Valbert.

SILK DEPARTMENT.

A Novel Artificial Silk Fabric.

The accompanying illustrations show a device for making a filament from a paste, and at the same time laying the strands in a position to form a fabric, which cannot be said to be either spun or woven, but which, the inventor claims, take the place of tulle, gauze, muslin, crape, etc.

The receptacle, as also the number and size of the draw holes, vary according to requirements.

Fig. 1 is a longitudinal section of the apparatus. Fig. 2, a plan view of the apparatus working lengthways. Fig. 3 is a plan view of the machine working widthways.

The fabric is produced on a light frame, supported by a carriage on rails.

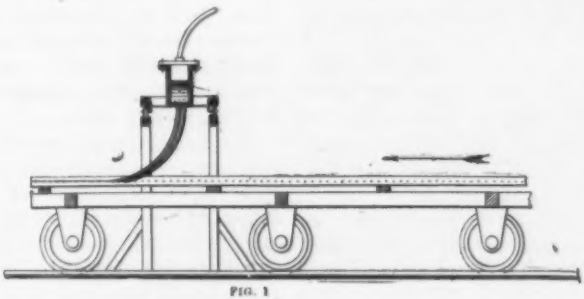


FIG. 1

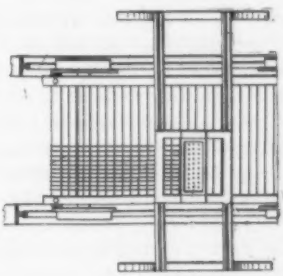


FIG. 2

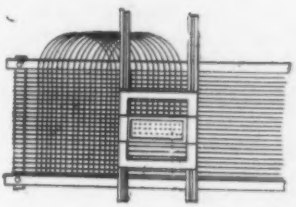


FIG. 3

A thick and hot bath of the liquor is introduced into a tightly closed receptacle. Holes or drawing apertures are provided, through which the liquid escapes in the form of very fine threads.

The flow is determined by air pressure upon the liquid. On leaving the receptacle, the hot liquid, which flows in the form of threads, is acted upon by the external cold air, which immediately hardens it. The dimensions of

On the frame are fine threads spread in the direction of its width and in spaces of three-eighths inch to one inch, according to the nature of the fabric.

The vessel containing the viscous liquid is supported by a carriage. It can also pivot on itself in such a manner as to be placed in the two rectangular positions, Figs. 2 and 3. Compressed air is furnished to it by means of a flexible pipe.

When the threads have left the vessel, they are arranged longitudinally on the frame, Figs. 1 and 2. The frame is put in motion in the direction of the arrow, and the threads are laid on it lengthways.

Each time that this operation is repeated the vessel is advanced until the threads have been laid across the whole width of the fabric. The vessel is then pivoted so that it is placed parallel to the frame, Fig. 3, and a transverse to-and-fro motion is imparted to it, while at the same time the frame is made to advance with each backward-and-forward movement equal to the width of the sheet of threads which have been deposited.

In this manner a regular layer of threads is obtained, which cross the first ones at a right angle and unite with them owing to their adhesiveness. The course over which the vessel has to travel is longer than the width of the fabric, so that the loops, which are formed by the changes of direction, remain on the outside and can easily be removed after the operation.

Many layers of threads can be superposed, thus enabling the thickness and strength of the fabric to be increased at will. The framing can be jointed, so as to form a parallelogram, thus enabling the form to be changed by making lozenge-shaped meshes of greater or less length in imitation of the meshes of tulle or other open work fabric.

When evaporation is complete, a fabric is obtained which is said to be light, flexible and glossy, and which may be finer than those obtained from textile materials. The fabric is removed without difficulty, the adhesion on the threads of the framing being prevented by greasing.

It is stated that the process can be applied to the decoration of ordinary fabrics, and thus constitute a new dressing or finishing process.

—The heart breaks and is healed with equal facility.—Dumas fils.

Wages of Silk Weavers in France.

Silk manufacturing in France is carried on to a considerable extent by the household system, under which the work is done by the piece for the owner of the material.

In an historical sketch of the Lyons silk industry, entitled Les Tisseur en Soie de Lyon, the statement is made that the silk workers of the household system are unable to save anything from their wages, and that even a brief period of idleness causes great deprivation and suffering.

When work ceases, they contract debts, if they can get credit, and pay when work is resumed, if they can There is no fund to draw upon during hard times, and besides this, the system necessitates a considerable outlay for stock in trade.

The income of the establishment is obtained by deducting the expense of twisting, folding of pieces, winding, filling, and equipping looms from the amount received for the custom work. We have seen accounts of weavers that show a deficit of $50 or $60 per year. Those who have steady employment earn a bare existence, while at the slightest slackening of work the weaver is forced to the greatest straits. A few favored ones are able to live somewhat better than the average, but the rest experience nothing but toil and poverty. The following examples are taken from the records of the more prosperous weavers. The vast majority keep no accounts. Of what use is it, they ask, to strike a balance, since nothing is ever left over?

The first statement is that of a home with four fancy looms on custom work, controlled by the widow. Her daughter and son-in-law each run a loom; the mother does the housework, and works in the shop when necessary. Ordinarily but three looms are in use, the fourth being used to make up for the unavoidable stoppage of the other three.

Following is the statement of re-

ceipts and expenditures for four years ending with 1898, during which a variety of fabrics were woven, including pekins, damask, velvet, and gauze:

Received for weaving 8006 yards		$2,343.40
Deduct folding pieces.	$16.80	
Twisting	48.00	
Winding	146.40	
Loom mounting ..	111.40	
Helpers	124.00	446.60
Balance		$1,896.80

This leaves $474.20 per year for three persons, or $3.04 per week for each one, for rent, food, clothing, etc.

The second statement is that of a family of two, a man and his wife, both expert weavers. They showed a carefully kept account, covering seventeen years. Following are the figures for the same four years as those covered by first statement:

Received, four years.....	$1,986.80
Expenses	499.48
Balance	$1,487.32

This balance for the four years is equal to $7.15 per week for two persons. In both cases the work was not interrupted. This, however, is quite unusual, and the average income of the silk weavers will be considerably reduced below these amounts on account of the periods of enforced idleness.

In another case the production of one loom, operated for a year without interruption, amounted to 1,303 metres, for which the proprietor received $223.70. The weaver was paid one half of this amount for weaving, $111.85, or $2.15 per week.

An official investigation of labor conditions in the silk industry disclosed that the weavers' wages averaged $2.10 per week.

—Carry your knowledge like your watch—in a pocket reserved for it.—Chesterfield.

Tests to Determine the Weighting of Silk.

Heretofore the test to determine weighting of silk by tin consisted in burning the goods. Uncharged silk would be consumed with a flame, while charged silk burnt without a flame.

Silk goods loaded with tin have an appearance entirely different from those not weighted. The scroop is less; salts of tin or aluminum give the fabric a sticky handle and render the silk unsuitable for dyeing or printing.

To test the presence of tin or aluminum weighting, the goods are colored with alizarin with the addition of chalk. The samples are first passed through a bath of hot water, then colored, washed, and soaped. Pure silk after this treatment is rose colored, while loaded silk acquires an orange or a more subdued reddish shade, in proportion to the quantity of aluminum present. By having a sample for comparison in which the quantity of weighting material is known, one can determine the approximate percentage of weighting material in a silk fabric.

The presence of tannin used for weighting is determined by the use of a solution of iron salts, which give well-known reactions with the different tannin materials.—Aug. Morann, Bulletin de la Societe de Mulhause.

—The Board of General Appraisers has decided that imitation silk yarn made in part from pyroxylin, but which has been denitrated in the process of manufacture, and which in its imported condition is not composed in chief value of pyroxylin or a compound of pyroxylin, is not dutiable under paragraph 17, act of July 24, 1897, but is dutiable under paragraph 385, by virtue of section 7 of said act, as silk yarn or thread.

—A poet should have but one model, nature; but one guide, truth.—Victor Hugo.

POWER DEPARTMENT

The Purifying and Softening of Water.

In 1884, there was placed on the German market a steam boiler purifier, which at the time marked a great technical advance, and in a short time more than 3,000 machines of this description were erected. The inventor, Hans Reisert, assisted by Alfred Dervaux, then made complete and extensive experiments, the results of which are seen in the various types of water purifiers manufactured and sold by the Automatic Water Purifying Co., 45 Broadway, New York.

The importance of pure water in the textile industry is so well known as to need no further reference here, and the foul condition of much of the water supplied to our mills render some means of artificial purification a necessity.

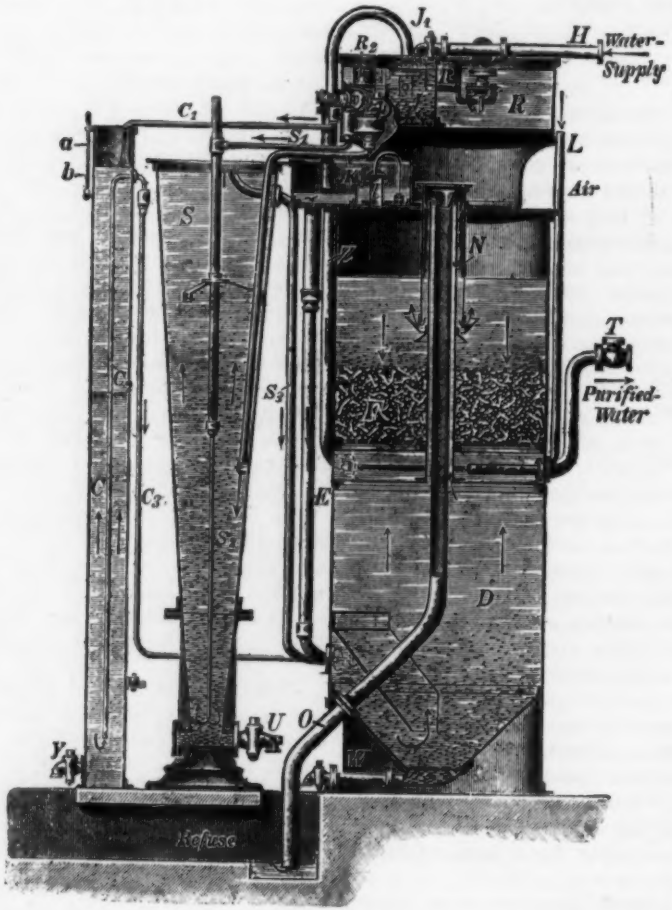


Fig. 1.

The claims made for the Automatic Water Purifying Co.'s devices are that they will clarify and purify

muddy water from the stream, the hard water from well and spring and acid water pumped from mines, in fact, that they will render any kind of water (except sea water) suitable for industrial purposes. The apparatus is automatic, and operates without the aid of power; it is simple and durable in construction; easily erected and operated in a small space; it is readily adjusted to changing conditions and requirements. The apparatus is sold without restrictions, and there is no expense in the way of royalties or rentals.

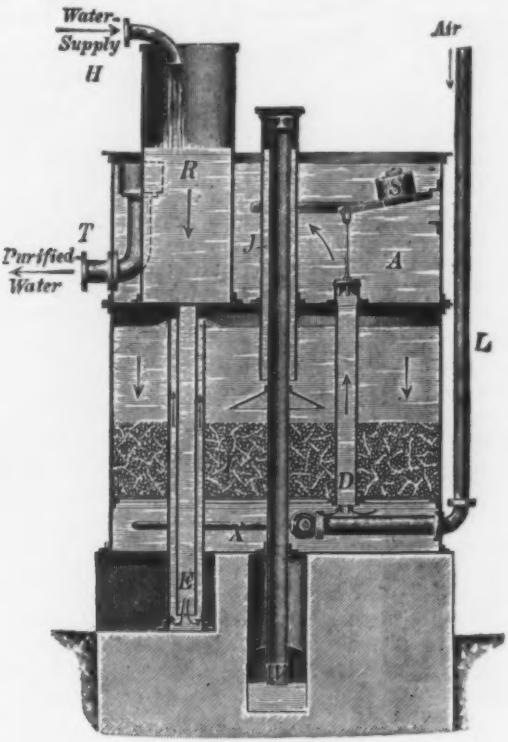


Fig. 2.

This process has been found very useful in treating water intended for steam boilers, and it is claimed that by its use boiler compounds are rendered unnecessary. We are informed that there are 140,000,000 gallons per day being treated by this system for boiler use alone.

Many mills buy city water for boilers, owing to the condition of well water, but it is claimed that the Automatic Water Purifying Co.'s process will enable such concerns to use well water at considerable saving. The company have testimonials from 250 textile mill customers, testifying to the satisfactory working of the system.

The following letter from a railroad manager in Germany furnishes strong evidence in favor of the process:

Heidelberg, Aug. 23, 1897.

The plant erected at the Railroad Depot at Landa on February 20, 1894, for purifying 120,000 gallons per day for feed water for locomotives on the Baden Railroad, soon thereafter showed that boiler incrustation was stopped not only in the locomotives but in the stationary boiler at the station. Tests were made after three or four weeks' operations and not only was incrustation stopped

on tubes and boiler plates, but old incrustations were completely removed therefrom. This was not only advantageous in quicker vaporization of water, but in the maintenance of locomotives. By the employing of this system the irregularities caused by foaming in the locomotives was entirely overcome. The daily attendance upon the apparatus is simple and the entire plant occupies little space.

After our experience at Landa we recommend it for all large stations where satisfactory feed water is not available, as such devices are conducive to the saving of coal and costly repairs and the removal of irregularities in the maintenance of locomotives.

(Signed) Peters, Machine Inspector, Dept. of Locomotives and Boiler Inspection, Grand Dukedom Baden State Railroad.

Fig. 1 shows the automatic water purifier, style D. B.

The carbonates are precipitated by quick lime and the sulphates by soda ash, the softened water is then filtered. The apparatus is supplied with lime and soda once a day.

Should the filtering material, which need not be renewed and does not wear away, become choked up with sediment at any time, the water level rises, the air present over it escaping through the tube, 1, and the syphon, consisting of three pipes, arranged concentrically one within the other, begins to operate. Air is energetically sucked in through the pipe, L, rushing through the filtering material from the bottom upwards, and freeing the sediment particles from the fine filtering material. The influx of air then ceases and from the tank, R, through the pipe, Z, there comes a definite quantity of washing water which cleanses the filtering material, the sediment water flowing away through the pipe, O. After this the syphon stops working, and the whole apparatus commences operations anew.

The attendance of the apparatus is confined to charging it once a day with lime and soda and to opening the sediment cocks, U, W, and Y, for a few moments, in order to remove the sediment.

Fig. 2 is the Automatic Filter for treating muddy river water. This is intended for location where the supply of clear spring water is not available and where river or city water contains much material in suspension. When the filtering material becomes choked with mud the apparatus cleanses itself automatically and then automatically sets to work again.

Further information in regard to these interesting devices can be obtained from the Automatic Water Purifying Company, 45 Broadway, New York.

The "Hartford" Mechanical Draught Fans.

The requirements for mechanical draught have made it necessary to construct fans for this special purpose. They may be applied in either of two ways: for forced draft, where the air is forced into the ashpit and an excess of pressure maintained therein, or for induced draft, where the hot gases are drawn through the fan and a partial vacuum created above the fire. Which method is to be applied must depend upon the conditions, but evidently the fan should be designed in accordance with the method of application.

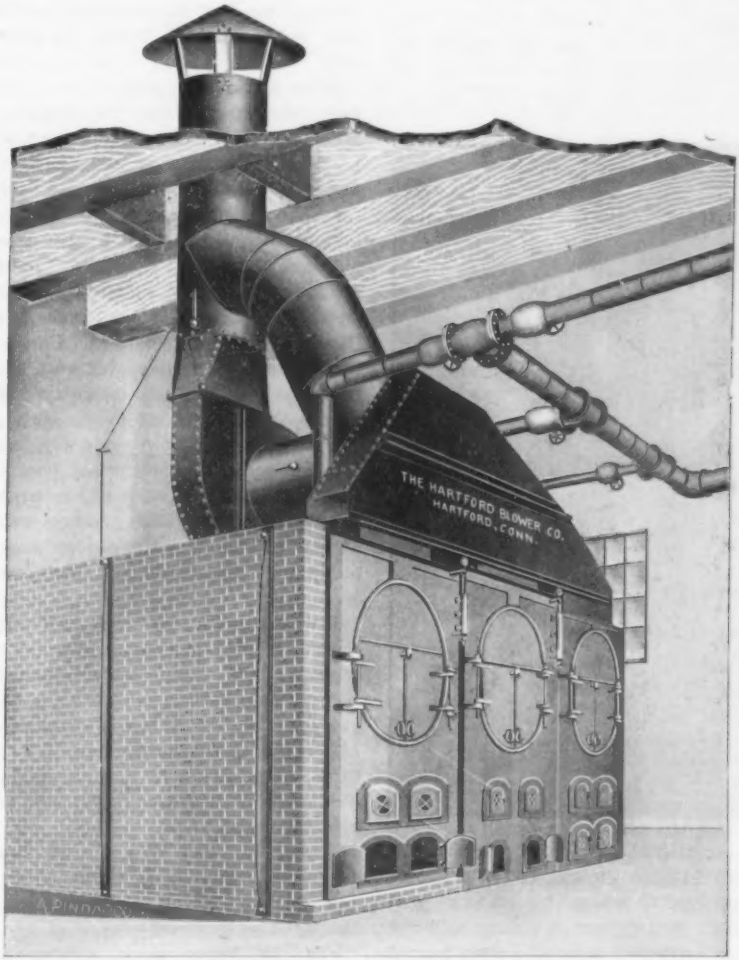
It is claimed that the application of mechanical draft insures many economies, impossible to attain with a chimney. By means of a fan an economizer may be employed and the draft maintained, thereby greatly increasing the efficiency of the plant, cheaper grades of fuel may be used and the rate of combustion may be increased.

The draft is made flexible yet positive, and its intensity may be adjusted to the requirements. The fan may be readily applied to increase the steaming power of an existing plant, and as a substitute for a chimney is far less expensive. Its capacity may be changed by merely changing the speed of the engine; it is portable and readily adaptable to new conditions.

There are many ways of applying mechanical draft, and each particular

case will need careful consideration to secure the best results at the least outlay. For this reason it is best to have each plant carefully examined and the fans built to suit the conditions.

line of blowers and exhausters for all purposes, and make a specialty of steam heating, ventilating and drying apparatus, counter shafting, dust separators, automatic furnace feeders, etc.



BOILER PLANT EQUIPPED WITH THE HARTFORD BLOWER CO'S SYSTEM OF MECHANICAL DRAFT.

The Hartford Blower Co., Hartford, Conn., are giving special attention to mechanical draft equipments, and invite correspondence with interested parties.

In addition to the mechanical draft apparatus, they build an extensive

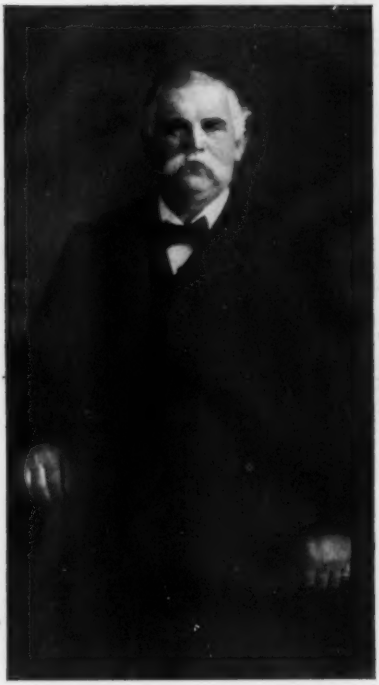
—A natural facility and an acquired impediment are necessary to write well.—Joubert.

—Suspect them of covetousness who refuse what appears to their advantage.—Mme. de Puysieux.

Memoirs of a Veteran Master Mechanic.

EBEN GOULD.

I was born in a village called Holbrook in a town of Northbridge, Worcester County, Mass. Holbrook was a small factory village owned by Sylvanus Holbrook, and my father superintended his mills at that time. In 1826 when I was three years old, my



father moved to a small factory village in the town of Willington, Connecticut, where he and a man named Kellogg ran a woolen mill for three or four years. He then moved to Oxford, Mass., working there in a small woolen mill, owned by Captain Robinson.

Here I saw for the first time a carding machine making rolls for hand spinning. The farmers around Oxford brought in their wool and had it carded into rolls for them to take to their homes to be spun into yarn by the women folks, on the old fashioned spinning wheels. The card was about 30 inches wide. This method of spinning has long since disappeared from New England, but upon a recent visit to Tennessee, I was surprised to find that it is still carried on there in the same antiquated way as in Oxford, Mass., 60 years ago.

After a stay of a year or so in Oxford, we returned to the Holbrook Mills, at Northbridge, where we remained ten years. Soon after arriving in Northbridge, I found an old loom that had been discarded and thrown into an open lot. With the same pleasure that I have always felt in working around machinery, I gathered the scattered pieces and fixed them up ready for business. I would then take hold of the hand rail, and for noise from one pair of gears, that pair took the cake, if not bakeshop. The loom disappeared suddenly, and I never could find out what became of it. In latter years, the idea slowly dawned upon me that perhaps some of the neighbors were not so fascinated with the rattle of these gears as I was.

I was soon put to work in Northbridge, piecing ends on the finishers in the card room under Richard Sayles, boss carder, who after a few years left and went to the Blackstone Mills. From the card room, I went to the other rooms in the mill until I had worked on every machine in the establishment.

After piecing I was set to work feeding the breakers. There were no burring machines in those days, and the wool sorters were expected to remove the burrs when sorting the wool. A great many, however, were left in, and the overseer of the sorting room would pay the boys who fed the cards, six cents per thousand for all the burrs they could find in the wool, while feeding the breakers. This amount was then deducted from the wool sorters' wages, as a sort of fine for bad work on their part.

As the wool came from the doffer

it was wound on a drum and when enough had been wound, a bell would ring and the card tender would cut the lap from the roll with a knife. This roll was then fed into the second breaker. I stayed in the mill until I had worked on every machine in the factory, picker, card, jack, loom, fulling mill, washer, shear and in the packing room.

At the age of 15 I left the woolen mill and went to work at Holbrook's lower village, a little place one mile down the Blackstone river, and popularly known at that time as "Toadville." Here, there was a cotton, saw and grist mill all owned by Mr. Holbrook, who was proprietor of the upper village also. Here I worked in the repair shop, and as neither the saw nor grist mill could furnish work enough to keep me busy, I was frequently set to work running both the saw and grist mill when either had work to do.

The price for grinding the grain was paid by what was called tolling or taking out two quarts from each bushel brought in. One day the owner himself came down with a pretty big load of corn, all in bags made from the old fashioned salt sacks, each containing four bushels; I thought this was a pretty heavy load for a boy of 15 to shoulder and lug into the mill. After the mill had been started grinding this grist, Mr. Holbrook came in and said:—

"Have you taken out the toll?"

"I am just going to do so," was my reply.

"When do you generally take out the toll?"

"As soon as the mill gets to grinding," I replied.

"Suppose you should forget at first, would you take it out later?"

"I do not forget."

"Well if ever you have any doubt about it, you just toll it to be sure."

I said nothing, but kept up a pretty busy thinking. The boss then left the mill to go into the factory. I took a four quart measure instead of the two quart generally used for tolling, and according to his suggestion retolled his corn, and I assure you that his four bushel sacks were much easier to load on the team than they had been to bring into the mill. Pretty soon Mr. Holbrook came round, and looked at the sacks on the wagon. He did not say a word, but from the smile on his face I think he smelt a rat. There was nothing wrong about it, for what was taken from the sacks went into the barrels, and both were owned by Holbrook himself.

I worked here nearly all the time for four years, and at the age of 16 met with my first serious accident by having a white oak block, 12 inches square, fall a distance of 16 feet and strike a glancing blow on my head causing a wound that did not heal completely for over twenty years. I still carry under my hat and always will, the mark made by that oak block 60 years ago.

In 1844 my father moved to Woonsocket, R. I., where we worked in the repair shop for Mr. Edward Harris. My father remained with Harris until 1870, but I stayed only a few months, and then went to the Woonsocket Furnace Co., which was managed at that time by Willis and Lyman Cook. Here I worked for several years building woolen looms and cotton cards, afterwards going to work for Cook & Grant; while there we made the shafting for the Harris No. 4 mill, which I believe is now owned by the Electric Power Company. James Verry was at that time superintendent at the Harris Mills. Later in 1864 he went to Dedham, as agent of the Merchants Woolen Mills, where I worked at the time as engineer and machinist.

In 1852, I went to the Perry Cotton Mill in Newport, R. I., as machinist. This mill was run by Mr. Gardiner. K—— was engineer, and here I obtained my first opportunity

of seeing how an engine was run. I used to go into the engine room to see the engineer start up and shut down at noon and night. This engine was in many respects a very peculiar machine, differing from any I have ever seen since. It was built by Thurston & Green. The bed piece was a large square frame. It had been changed by the Corliss and Nightingale Co. by taking off the old cylinder and putting on a new one equipped with their new rotary valve; this engine was one of the first, I believe, that they equipped with this style of valve, which has since been so extensively used.

In place of the usual balance wheel, the Newport engine had a large gear 16 inches in diameter, which was connected with a jack wheel on the main shaft of the factory.

Before going to Newport, I had worked a little on boilers at Harris', but never on an engine, and all that I knew about an engine was obtained by watching engineer K——, and assisting him whenever he wanted anyone to do so. I had little idea I was soon to blossom into a full fledged engineer.

In the summer of the year I went to Newport, a great scare was created over the cholera which had become epidemic in many places. There were many deaths in Newport and thousands of people were leaving the city daily. All my help in the machine shop had left, and one of the most frightened of all was Engineer K——, who still remained. One morning he came into the machine shop and said:—

"Gould, I wish you would come into the engine room for a minute."

"All right," I answered, and went down to the engine room.

"I am obliged to go to Providence, and would like to have you stop and start at noontime, and if I am not back in time, I would like you to shut down at night. There is a bare possibility that I may not get back tonight, and in that case I would like to have you to start up tomorrow morning. Keep your eye on the fireman, and see that he keeps the steam at the right point."

I told him I would do my best. Little did I think that the few hours that I then expected to look after an engine would extend into days, weeks, months and years, for, beginning with that time, there were during 45 years but a very few days in which I did not have the care and management of both engine and boilers.

K—— left on the 10 a. m. boat for Providence. Later in the day the super came round. I asked him what time K—— was coming back. He was surprised to learn that he had gone, as there had been nothing said to him about it. Nothing was seen or heard of K—— for over a week, when I received a letter from him asking how I had got along with the engine, and with a postscript asking how the cholera was. I showed the letter to the super, and we concluded to write him that the engine was all right and the cholera was all right too.

That brought Engineer K—— back to Newport, but not to stay, for next morning he heard that the cholera was as bad as ever, and left without a word to anyone except the fireman, and he even made the fireman promise not to tell where he had gone, but, if he must have help, to call on Gould, the machinist. About 11 o'clock in the forenoon, I noticed the speed slowing up. I went to the engine room, and found no one there. The speed was so slow that the valves did not unhook, and the gauge showed very low pressure. I then went to the boiler room and found the fireman punching fires and sweating like a good one. I looked at the gauge and there was no water in sight.

(To be continued.)

DYEING DEPARTMENT

Dye Recipes for March.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 33.

Violet on Worsted Yarn.

Benzyl Violet 4 B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Benzyl Violet 4 B.
(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter almost cold, bring slowly to a boil and dye at this temperature for one hour, exhausting the bath if possible.

Benzyl Violet 4 B gives exceptionally bright and comparatively fast shades. They are also interesting to dyers of union goods, as they may be used to top or brighten shoddy. For this class of goods it is not necessary to use sulphuric acid to get the color on.

Recipe No. 34.

Blue Black on Silk.

Silk Black A on 100 lbs. of silk yarn.

Prepare the dye bath with

6 lbs. Silk Black A.
(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

1 lb. Sulphuric Acid.

Enter at 140° F., bring slowly to a boil and dye for one hour.

Silk Black A gives a desirable and brilliant shade of blue black.

Recipe No. 35.

Brown on Cotton Yarn.

Direct Buffalo Brown R on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Direct Buffalo Brown R.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

10 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Direct Buffalo Brown R is one of the fastest browns of this shade known, and is suitable for all purposes, not only on cotton but on union goods.

Recipe No. 36.

Heliotrope on Cotton Yarn.

Diamine Heliotrope O on 100 lbs. cotton yarn.

Prepare the dye bath with

1 lb. Diamine Heliotrope O.
(Cassella Color Co., Ltd., 182 Front St., N. Y.)

20 lbs. Common Salt.

Enter at 160° F., bring to a boil and dye at a boil for one hour.

Diamine Heliotrope produces bright shades of Heliotrope, has good fastness to acids and alkalies, and possesses all the characteristic properties of the direct cotton colors.

Recipe No. 37.

Black on Worsted Yarn.

Empire Black No. 2446 on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Empire Black No. 2446.
(F. E. Atteaux & Co., 176 Purchase St., Boston.)

4 lbs. Acetic Acid.

1 lb. Sulphuric Acid. (Added after boiling one-half hour.)

Enter the previously wet out goods at 100° F., bring slowly to a boil and boil one hour. Then add 1½ lbs. Potassium Bichromate and boil 20 minutes longer.

Empire Black No. 2446 produces an excellent black on worsted yarn.

Recipe No. 38.

Light Yellow on Worsted.

Fast Light Yellow 3 G on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Fast Light Yellow 3 G.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

10 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter at 160° F., bring to a boil and dye at this temperature for one hour, exhausting the bath if possible.

Fast Light Yellow 3 G gives an extremely clear shade of yellow and is extremely fast to light.

Recipe No. 39.

Blue on Cotton Yarn.

Alizarine Blue D 4 R on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Alizarine Blue D 4 R.

(Victor Koechl & Co., 122 Hudson St., New York.)

30 lbs. Common Salt.

1 lb. Soda Ash.

Enter yarn at 170° F., bring to a boil and dye at a boil for one hour.

Alizarine Blue D 4 R gives a full shade of blue, and possesses all the characteristic properties of the direct cotton colors.

Recipe No. 40.

Brown on Cotton Yarn.

Thiogene Brown R on 100 lbs. cotton yarn.

Prepare the dye bath with

10 lbs. Thiogene Brown R.

(Victor Koechl & Co., 122 Hudson St., New York.)

40 lbs. Common Salt.

3 lbs. Soda Ash.

Enter at 160° F., bring to 195° F. and continue the dyeing at this temperature for one hour. Wash and after-treat in a bath containing

3 lbs. Potassium Dichromate,

2 lbs. Acetic Acid,

at a temperature of 140° to 175° for one-half hour.

Thiogene Brown R is a sulphur color and possesses all the valued properties of that class, but can be applied without the use of sodium sulphide.

Shades produced with Thiogene Brown R are fast tho all the common light destroying agencies.

Recipe No. 41.

Blue on Worsted Yarn.

Wool Blue S R Ex. on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Wool blue S R Extra.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter yarn at 170° F., bring to a boil and dye at this temperature one hour, exhausting the bath if possible.

Wool Blue S R Ex. is distinguished for its very clear and bright shade and level dyeing properties and low cost.

Recipe No. 42.

Red on Worsted Yarn.

Milling Red E on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Milling Red E.

(Sykes & Street, 85 Water St., New York.)

15 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter at 160° F., bring to a boil and dye at a boil for one hour, exhausting the bath if possible.

Milling Red E produces a full shade of red, which is extremely fast to washing and milling.

Recipe No. 43.

Blue on Cotton Yarn.

Zambesi Pure Blue 4 B on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Zambesi Pure Blue 4 B.

(Berlin Aniline Works, 72 Front St., New York.)

1 lb. Soda Ash.

50 lbs. Common Salt.

Dye for one hour at a boil, rinse slightly and treat for ¼ to ½ hour in a cold Diazotizing bath containing

3 lbs. 2 oz. Sodium Nitrite.
13 lbs. 8 oz. 32° Tw. Hydrochloric Acid.

Then wring or squeeze, rinse slightly and enter into a cold developing bath containing

1 lb. Beta Naphthol.
1 lb. 76° Tw. Caustic Soda.

Work for ¼ to ½ hour, rinse soap if necessary and dry.

Zambesi Pure Blue 4 B produces a bright indigo shade of blue, which possesses excellent fastness to washing and light.

Recipe No. 44.

Black on Cotton Yarn.

Niagara Direct Black M B Extra on 100 lbs. of cotton yarn.

Prepare the dye bath with

6 lbs. Niagara Direct Black M B Extra.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)
50 lbs. Common Salt.
1 lb. Soda Ash.

Enter at 180°, bring to a boil and dye at a boiling temperature for one hour.

Niagara Direct Black M B Extra produces an excellent shade of black and possesses the characteristics of the direct cotton blacks.

Recipe No. 45.

Brown on Cotton Yarn.

Mikado Brown B B on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Mikado Brown B B.
(C. Bischoff & Co., 87-89 Park Place, New York.)
100 lbs. Common Salt.

Enter at 180° F., bring to a boil and dye at a boil for one hour.

Mikado Brown B B gives a full and rich shade of brown and possesses all the characteristic properties of the direct cotton colors.

Recipe No. 46.

Lemon Yellow on Cotton Yarn.

Tetrazo Lemon Yellow on 100 lbs. cotton yarn.

Prepare the dye bath with

1 lb. Tetrazo Lemon Yellow.
(New York & Boston Dyewood Co., 55 Beekman St., New York.)
25 lbs. Common Salt.

Enter at 180° F., bring to a boil and dye at a boil for one hour.

Tetrazo Lemon Yellow gives a very clear shade of yellow, with a low percentage of dye stuff.

Recipe No. 47.

Black on Worsted Yarn.

Acid Alizarine Black 4 B on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Acid Alizarine Black 4 B.
(F. E. Atteaux & Co., 176 Purchase St., Boston.)
5 lbs. Acetic Acid.

Enter yarn at 100° F., bring to a boil and dye at this temperature for 45 minutes, then add

2 lbs. Sulphuric Acid,

boil 15 minutes longer then add

1½ lbs. Bichromate of Potash,

and then continue the boiling for 15 minutes.

Acid Alizarine Black 4 B produces a black fast to light and fulling, and is especially applicable to piece and yarn dyeing.

Recipe No. 48.

Violet on Worsted Yarn.

Benzyl Violet 10 B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Benzyl Violet 10 B.
(A. Klipstein & Co., 122 Pearl St., New York.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter almost cold, bring to a boil and dye at that temperature for one hour, exhausting the bath if possible.

Benzyl Violet 10 B gives exceptionally bright and comparatively fast shades.

They are also interesting to dyers of union goods, as they may be used to top and brighten shoddy. For this class of goods it is not necessary to use Sulphuric Acid to get the color on.

Bleaching Raw Cotton and Cotton Waste.

The operations in bleaching raw cotton stock are as follows: 1, Opening the bales and picking the cotton; 2, boiling or wetting out; 3, chemicking with a solution of chloride of lime at 1 degree Twaddle; 4, washing in clear water; 5, neutralizing with sulphuric acid at 1 degree Twaddle, or what is better with bi-sulphite of soda, or anti-chlorine, which will not tender the fibre; 6, washing and blueing with Alkali Blue 4B, dissolved in neutral and warm soap. The stock is then extracted and dried.

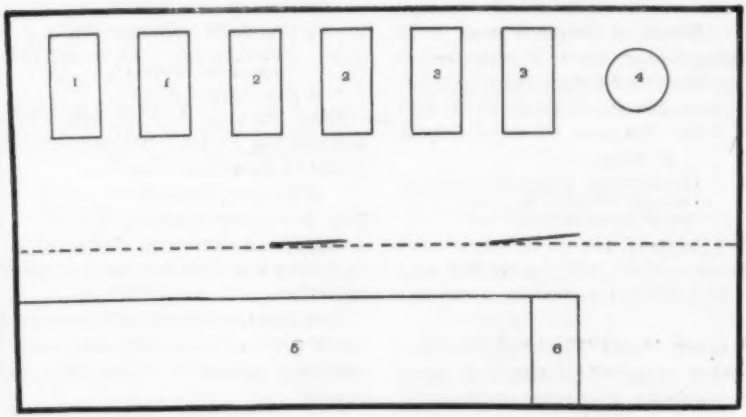
The cost of drying in an up-to-date plant is very small; many use exhaust from the engine for heating the dryer.

The bleaching plant, say for one thousand pounds per day, consists of one cotton opener, one kier, one brass centrifugal pump, one large extractor. One table dryer, 8x40 feet—320 square feet—will dry 1,000 pounds per day. Machine dryers are more economical if the production is large enough to warrant their use.

I would have the kier large enough to hold one day's work, and complete the bleaching entirely without rehandling before extracting.

Much of this work is done in ordinary vats 8x3x3 feet, 100 pounds in a lot; one tub for boiling, one tub for the chlorine bath, from which it is raised and allowed to drain, then washed in another tub, raised and soured. It is then returned to the tub, and washed without raising again until the washing is completed, and it is ready to be extracted.

The cost for labor, where raw stock dyeing machines are used, is about ½ cent per pound; when handled in ordinary tubs, it runs from .7 to 1.2 cents per pound. This includes all work from the open bale until it is landed in the picker room.



The estimates of cost given here are based upon a large production. If a bleacher is employed at $2.50 or $3 a day to oversee the production of 500 pounds, it will add considerably to the figures quoted here.

With the simple tub arrangement handling say 125 pounds in a batch, eight men can do the work, as follows: Two men can boil four batches of 125 pounds each, making 100 pounds; two more men can bleach the stock; two more sour and wash it; one man can easily extract it; one man do the dyeing and use the opener if needed, making a total of eight men, at a cost of $10 a day, or one cent per pound. This makes no allowance for an overseer.

A plant could be laid out as follows: Two boiling tubs 8x3x3 feet;

two chloride of lime tubs 8x3x3 feet; two tubs 8x3x3 feet for souring and washing; one large extractor; one table dryer, 8x40 feet.

The accompanying plan shows the arrangement of tubs and machines. No. 1-1, are the boiling out tubs; 2-2, chlorine tube; 3-3, souring and washing tube; 4, extractor; 5, dryer; 6, fan; the opener, if used, should be in the picker room or in a separate apartment, as it would get rusty in the dyehouse. Roger Williams.

—The Appleton Woolen Mills Co., Appleton, Wis., have adopted a system of profit sharing with their employees, and at the first distribution of 5 per cent., that was recently made, each employee entitled to share in the profits received a bankbook showing the amount deposited to his credit in the First National bank, together with a pledge from the company that the person showing the largest additional deposit, proportionate to wages received during the ensuing year, will, at the expiration of such time, receive a cash prize of $25.

—Beginning April 1st, 1902, the legal hours of labor in all industrial establishments throughout France will be 10½ per day. The law provides for a reduction two years later, 1904, to 10 hours per day.

—The Austrian government recently made enquiries among the textile mills of that country to find out whether cloth measuring machines were used and if so whether there was need of an official inspection to ensure their accuracy. The investigation disclosed that fact that no such machines were used, measurements being made in various ways by hand. In the replies received it was stated that the few machines that had been tried would give accurate results on both light and heavy goods. The general opinion was that the variation of elasticity was responsible for the variation. There should be an opportunity for American measuring machinery in Austria. Our machine builders have solved the problem successfully.

—There are 232,821 women employed in English cotton factories and 147,245 men.

—The metric system of weights and measures was adopted by France in 1790; by Holland, 1816; Belgium, 1820; and by Sweden, 1889.

Piece Dyed Mixtures.

During the past year a process for producing mixtures in yarn or piece dyed woolen goods has been frequently mentioned in French and German textile journals.

It consists of using a mixture of mordanted and unmordanted wool; this mixture is then manufactured in the usual way and dyed either in the yarn or piece. The mordanted stock is colored, while the unmordanted wool remains white, thus producing a mixed effect.

The process has been patented recently in this country.

The inventor states that the object of his present invention is to make mixtures in botany, cheviot, and other woolen yarns, as well as multicolored twists and fabrics which contain such yarns.

Mixtures have heretofore been made by mixing woolen fibres of different shades, each of which had to be dyed first, and while multicolored twists have been made by twisting threads of different shades, which had also to be dyed first; the new way of making those yarns and fabrics which contain such yarns is as follows: Woolen fibre, either wool or tops or noils or any other kind of woolen material, is prepared or mordanted, for example, by fixing chromic acid on the fibre or by any other mordanting or preparing process. Now the prepared woolen fibre is mixed with unprepared fibre or with

fibre prepared in any other way, and they are spun together.

For making multicolored twist the prepared or mordanted thread is twisted with unprepared thread or with threads prepared in another way. It is advisable to give the prepared or mordanted wool or thread a light red or blue shade in order to have a better control over the mixing or twisting process.

The yarn fabricated in the above-described way is either dyed in the yarn in hanks or skeins or it is woven and then dyed in the piece. In either case the yarn or cloth is dyed so that the prepared fibre gets a shade different from that of the unprepared fibre, as well as from that of the fibre prepared in another way, so an effect of two or more shades, according to the number of kinds of prepared fibres and unprepared fibres, is made by dying the aforesaid mixtures or twists in hanks or in the piece.

The dyeing is done with a combination of coloring stuffs which either have no effect on unprepared fibres or have a different effect on prepared fibres and on unprepared ones or which dye both classes of fibres in the same way.

Waterproof Finish.

Waterproofing will be considered in these articles only from one standpoint; that is, treating the fabric so that its outward appearance remains unchanged. No machinery is required other than the ordinary machines used in finishing cloth. All other processes by which the cloth is covered with a coating of a character different from that of the fabric itself are thus excluded. We will treat only of those methods consisting of saturating the goods in metallic salts which are easily dissolved and which form a deposit on the fibre and also of the processes employing soap and metallic oxides. By these methods, the goods are not changed in the outward appearance or in the capacity of absorbing air and perspiration, and for this reason are well adapted for waterproofing clothing as well as awnings, tent cloth, etc.

The methods which we shall describe, resemble each other in the character of the materials used, while the methods of manipulation vary considerably. They are alike in one respect; great care is necessary to obtain good results and to avoid defects, which are very difficult to remedy.

The cloth itself should be closely woven, since the pores of the fabrics must be filled with the waterproofing substance in order to secure that degree of resistance to water which the consumer demands. With tightly woven goods less finishing material is required, the goods gain less in weight, and the cost of labor is less. These are all points which should be carefully attended to, if a serviceable and salable product is to be obtained.

1. This method consists in impregnating the goods with any basic aluminum salt made by adding to a salt of aluminum an equivalent quantity of hydrat or carbonate of an alkali or alkaline earth, to which, if necessary, tartaric or citric acid is added. The goods are carefully rinsed in this preparation and quickly dried. —Alexanderson.

2. A soft, elastic, waterproof fabric, which stands repeated washing without losing its waterproof character, is produced by this process. The following solution is prepared in a large tank: 264 galls. water, 220 lbs. crys. alum, 308 lbs. carbonate of lime or chalk, 3½ lbs. Sandarac gum dissolved in alcohol. This is allowed to settle and the clear liquor then runs into another tank and heated to 60° or 70° C. The cloth is then entered in this liquor, well stirred and then dried.—Arieny-Flouy, Bayol and Laurens.

3. Acetate of lead and sulphate of

alumina are dissolved separately in water, each in the proportion of one ounce in one pint of water. These solutions are then mixed and the goods are soaked in the resulting liquor, acetate of alumina, after the precipitate has been removed. By drying the cloth in the air, the acetate of alumina decomposes, acetic acid escapes, which can be detected by the odor, and basic acetate of alumina is deposited on the fibre, which makes the fabric waterproof, as if it had been saturated with grease or fat. This process is simple and the goods so treated can be readily colored as the acetate of alumina acts as a mordant. The strength of the cloth is but slightly impaired.

According to Heinzerling, acetate of lime can be substituted for the acetate of lead. Forty-eight parts of acetate of lime is used for each thirty-four parts of sulphate of alumina. Sulphate of lime and acetate of alumina are formed. The first is insoluble and settles to the bottom when it is removed.—Balard.

4. The substances used for this process are divided into two groups. To the first belong the oxide of aluminum, antimony, tin, lead and zinc, which in combination with acids or alkalies form compounds soluble in water. These oxides are mutually decomposed, and insoluble oxyhydrates are deposited.

For instance, a mixture of potash aluminate with aluminum sulphate in solution results in the deposit of aluminum hydroxide, while, by substituting zinc acetate for aluminum sulphate, a mixture of zinc and aluminum hydroxide is formed.

The second group comprises the insoluble silicates, which are attained by the double decomposition of an alkaline silicate and metallic salt.

Soap possesses the property, when mixed with the alkaline salts comprised in these two groups, of preventing the decomposition. Upon this property and the resulting formation of insoluble compounds depends the process of waterproofing.

The process is carried on in two separate baths, through which the goods to be made waterproof are passed.

The first bath, for instance, is composed of a soap solution with potash aluminate, or a soap solution with silicate of soda (soluble glass); the second or reaction bath contains those salts which form insoluble compounds with the substances in the first bath.

To make cloth waterproof, there must be present in each 100 kg. water, 90 gr. fatty acid and 60 gr. silica in addition to the salt required to effect the deposit.

For example: The first bath is made up with 1½ kg. Marseille soap, containing at least 60% fatty acid, in each 100 litres water. Sufficient water is then added to enable the bath to hold 60 gr. anhydrous silica.

The second bath consists of solution of the salts of aluminum, antimony, tin, lead and zinc, including aluminum acetate, in combination with the quantity of potash aluminum necessary to effect the deposit of hydroxide of the alkaline salt in second bath. The best results are secured by a deposit of 60% hydroxide and 40% silicate. Thus the composition of the two baths must be adjusted to correspond with each other. In practice, the second bath is made two or three times the theoretical strength.

The goods are immersed in the first bath, and then in the second; then extracted and washed in water at 50° to 60° C. to remove the loose material. Goods so treated can be dyed readily, as the hydroxides act as mordants for the dyes.—Chevallot and Girres, from Die Appreturmittel.

—To be happy, live in retirement.—La Fontaine.

—Ordinary minds generally condemn all that is beyond their capacity.—La Rochefoucauld.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Scottsboro. The buildings for the Broadus Cotton Mills have been completed and work has begun installing the machinery. They contemplate starting operations some time in February.

—*Georgia, Conyers. The new mill, which will be erected by the Milstead Manufacturing Co., will have a capacity of 10,000 spindles. A. J. Milstead is president, F. D. Milstead, secretary and general manager. John H. Almand is treasurer. Work on construction has begun and is rapidly pushed on.

—Georgia, Tallapoosa. A temporary organization in which J. C. Tumlin is president; M. V. Sewall, vice-president; A. V. Howe, secretary and J. M. McBride, treasurer, has been formed to further plans for establishing a cotton mill here. Work has been started on soliciting the capital stock, which is placed at $100,000.

—Kansas, Coffeyville. The Coffeyville Cotton Manufacturing Company, in which Edward B. Thaw is interested, has been formed for purpose of erecting a 10,000 spindle cotton mill. Letter gives New York address of Mr. Thaw as 41 Wall street, but is not known there.

—*Massachusetts, Dalton. Crane Bros. are operating 6 looms at this place making hygienic bath towels, as was mentioned in a recent issue.

—*Massachusetts, Fall River. The new mill proposed for Fall River will be known as the Davis Mills, J. B. Richards, of the Arkwright Mills, treasurer. A corporation is expected to be formed this week and it is proposed to incorporate with a capital of $500,000. The mill will begin with 40,000 spindles and will manufacture fine cotton goods made from combed yarns ranking from 40s to 100s. The concern intends to purchase the lot of land at the corner of Warren and Quequechan Streets near the Arkwright Mill, and will erect a building of 127 by 350 feet, three stories high. Work on construction will begin as soon as the weather permits.

—*Mississippi, Starkville. The Textile Novelty Co., recently reported incorporated with capital stock of $10,000, by S. Kohorn and others, will manufacture lenos, Bedford cords, etc., operating 24 looms. Steam will be the power used.

—*Mississippi, Yazoo City. The Yazoo City Cotton Mills have been put in operation, making yarns.

—*North Carolina, Asheville. The Wm. Whittam Textile Co., organized with capital stock of $25,000 (authorized $250,000), expects to begin operations July 1, making corduroys. Henry Redwood is president of the company, W. T. Weaver, treasurer and William Whittam, Jr., superintendent. They will operate 100 looms, using electric power from the Weaver Power Co.

—*North Carolina, Claremont. The new cotton mill, which will be erected by Mr. J. W. Setzer and Mr. J. I. Sigmon, will manufacture all sizes of cotton yarns. The name will be Claremont Cotton Mill, with capital stock of $150,000. Work will start as soon as possible, and it is expected to have the mill in operation this year. Seventy-five hands will be employed at the start.

—*Rhode Island, Woonsocket. The new weave shed, that will be erected by the Manville Co. is expected to be ready in August. The building will be 425 feet long, brick, with saw-tooth roof, and will have a capacity of 1500 looms. Preparations are being made toward starting work on the foundation.

—*South Carolina, Gaffney. The new bleaching and dyeing plant, which will be erected by the Gaffney Manufacturing Company will cost about $500,000. The new building will be 100 by 400 feet and four stories high. Work has been started on the foundations.

—*South Carolina, Honeapath. An effort is being made by J. D. Hammett, of Greenville, S. C., to organize a cotton mill here with capital stock of $200,000. It is proposed to make sheetings from yarns Nos. 2 to 40, operating 10,000 spindles and 270 looms. While Mr. Orr's name has been mentioned in the project, he advises us that he is only helping and that Mr. Hammett will have the entire management.

—*South Carolina, Newberry. The new Mullohon Mill is nearing completion and expects to start running by April 15th.

—*South Carolina, Hartsville. The Hartsville Cotton Mills, which were expected to start March 1st, will be ready to start, so it is hoped, by May 1st.

Enlargements and Improvements.

—Alabama, Opelika. The Opelika Cotton Mills contemplate installing 1250 additional spindles in the mill. A meeting of the stockholders will be held to consider the increase. This mill was built so that additional installations of machinery could be made without erecting more buildings.

—Alabama, Uniontown. It is reported that plans are being prepared for an addition to be built to the Ella White Cotton Mills, and the capacity of the plant at present, doubled. The capital stock of the concern, $75,000, will be increased for the purpose.

—*Connecticut, Moodus. A. B. Chase has sold his mill to Hall, Lincoln & Co. of Boston, proprietors of the Williams Duck and Stone Mills. H. B. Fielding, Jr., is to have charge.

—*Georgia, Union Point. The Union Manufacturing Company informs us that while they contemplate installing a bleachery in their plant, it has not yet been definitely decided upon.

—*Massachusetts, Fall River. The Heywood Manufacturing Co., whose establishment was recently burned down, intends to erect two frame buildings on the same place. They will be two stories high, 110 by 40 and 28 by 60 feet respectively, with gravel roof and electric wiring. Electricity will be the motive power.

Massachusetts, Fitchburg. It is reported that the Hoffman-Corr Cordage Company of Philadelphia, will lease the old Glen Woollen Mill at West Fitchburg and will operate same as a branch mill.

—*Massachusetts, Lowell. Josiah Harriman, whose buildings were recently damaged by fire, is replacing one with a brick structure.

—*New Hampshire, Manchester. The new mill, which the Amoskeag Manufacturing Company intends to erect, will cost about $500,000. The improvements contemplated by the same concern for the old mill will consist in the installation of an electric plant of 2500 horsepower to run the weaving machinery and to light the plant, and will cost another $500,000.

—Massachusetts, North Adams. The Eclipse Mills are installing 50 new Jacquards in their plant.

—North Carolina, Charlotte. The Dover Yarn Mills are having plans prepared for the erection of an addition to the plant in which a weaving department will be installed.

—North Carolina, Rockingham. Leak, Wall & McRae, operating the Midway Mills, will build a weaving mill of about 400 looms, for consuming the product of the spinning plant. Work will soon be started on erection of building, also 30 new cottages for the operatives.

—Pennsylvania, Philadelphia. An addition, two stories, brick, will be made to John Scanlon & Sons' cotton mill, at an estimated cost of $15,000.

—Pennsylvania, Philadelphia. The Providence Mfg. Co. has started work on building an addition to the plant for linen finishing and will install additional machinery.

—Rhode Island, Woonsocket. The enlargement which the Lawton Spinning Co. is contemplating, will consist of addition of three stories to one wing, which is about 100 by 40 feet. The company will manufacture spool cotton in the future and will give employment to more people.

—South Carolina, Enoree. The Enoree Manufacturing Company has increased its capital stock from $400,000 to $700,000.

—*South Carolina, Fairmont. The Tyger Cotton Mills, recently chartered with capital stock of $100,000 (a re-organization of the old Fairmont Mills) will soon double the carding in the mill.

—South Carolina, Walterboro. A. C. Shaffer, president of the Colleton Cotton Mills, that is about to erect an additional building, 75 by 65 feet and four stories, wants bids on the construction.

—*South Carolina, Winnsboro. The Fairfield Mills, which have ordered recently 250 new spindles and are about at present to install them, are reported to add 2500 more in the near future, which will bring their capacity to 15,000.

—Tennessee, Jackson. The Jackson Fibre Co. will expend about $100,000, making additions to the plant here. They will add about 6000 spindles with proportionate number of looms.

—Tennessee, Knoxville. The Knoxville Cotton Mills Co. is to build an addition to their mills.

Woolen.

New Mills.

—Connecticut, Thompsonville. A new company has been formed to manufacture all grades of Axminster carpets, which will be known as the Upson-Martin Carpet Company. Capital stock $150,000. Messrs. Upson and Martin were formerly connected with the Hartford Carpet Co.

—*Iowa, Lake Mills. The new mill at this place, known as the Lake Mills Woolen Mill Co., removed from Albert Lea., Minn., has been put in operation. Ole Scar is president of the concern, John R. Larson, treasurer and Gilbert Nystuen, secretary. They manufacture blankets, flannels, cassimeres, etc.

—*Massachusetts, Lowell. The company which is operating the navy yard mill has been incorporated under Maine laws as the Merrimack Woolen Co. Charles S. Cook of Portland, Me., is president, and Charles A. Robinson of South Windham, Me., treasurer.

—*Massachusetts, Lowell. Work on the new plant which the Massachusetts Mohair Plush Company is going to erect, is expected to start next week. It is hoped to have the plant ready by June 1st.

—New York, Westbrookville. J. E. Ashworth & Sons will start up a new mill here March 1st, for making woolen blankets. R. C. Ashworth is president of the company and J. E. Ashworth treasurer. Water power will be used for operating the machinery, 1 set cards and 4 looms. A dye house will be attached. Goods to be sold direct.

—*Ontario, Galt. The Galt Carpet Co., Ltd., recently reported incorporated with capital stock of $40,000, expects to have the new mill ready for production of goods March 1st. H. H. Burrows is president and superintendent of the plant, which will be equipped with 7 power and 5 hand looms for making carpets, art squares, rug fringes and carriage dusters. A dye house will be attached. Steam is the motive power to be used. Concern was formerly at Guelph, as the Royal Carpet Co.

—*Oregon, Eugene. The Williamette Valley Woolen Mfg. Co. will build a scouring mill which will be operated in connection with the woolen plant.

—Pennsylvania, Philadelphia. The Frankford Carpet Mills have been put in operation recently by W. & R. Ford,

formerly manufacturers of carpet yarns only. The mill, which is 250 by 52 feet, two stories, is equipped with 50 looms. A new building is under construction.

—Pennsylvania, Philadelphia. A new woolen mill is to be erected at Sedgeley and Erie Aves. for Carl Gubenan. The building will be 140 by 105 feet, four stories, brick.

—*Rhode Island, Woonsocket. The mill of the Loridan Worsted Co., on Nova Villa, has started operations with 40 hands, making worsted yarns on French system. The new building is brick, 162 by 100 feet, two stories high. Mr. Loridan is superintendent. The mill will give employment to 80 people when it is running at its full capacity.

—*Texas, Weatherford. The Ajax Textile Co. is the name of the new concern recently organized at this place for manufacturing worsted yarns, 10s to 20s, single and ply. Company has capital stock of $50,000, with G. M. Bowie, president; C. D. Hartnett, treasurer and A. F. Parker, agent and buyer. Mill will be equipped with 4 worsted cards, 4 combs and 1200 worsted spindles. Goods will be sold direct. Operations are expected to start May 1st.

Enlargements and Improvements.

—*California, Marysville. The board of the directors of the Marysville Woolen Mills has voted an increase of the capital stock to the extent of $100,000, which will be used for enlargement of the mill.

—*Connecticut, Somersville. The Somersville Manufacturing Co., which is erecting an iron water tower, previously reported upon, has also installed 17 new looms in the mill.

—Iowa, Nashua.—W. J. Bowen has purchased the machinery of the West Point Woolen Mills Company's plant, which has been idle for some time and offered for sale. Same has been removed to his plant at this place.

—*Kentucky, Louisville. The Mayfield Woolen Mills Co. has decided to give up its mill at Mayfield, Ky., and to combine it with the old Kentucky plant at this city. The enlarged mill will give employment to about 400 hands and run 88 broad Knowles looms.

—Maine, Abbott Village. The Dill Manufacturing Company intends to extend its capacity within a short time considerably and has already purchased some machinery.

—Maine, Hartland. The Linn Woolen Co. has purchased the looms of the Hillsborough Mills, Wilton, N. H., and removed same to their plant.

—Maine, Sanford. The Goodall Worsted Company, which voted recently to increase its capital stock from $300,000 to $500,000, has decided to enlarge its plant. The company will erect a new brick building to be used as addition to the present weaving department. It will be a two-story building, the top floor being used for a weaving room, which will contain when ready 321 looms, giving employment to 250 additional hands. Work on construction will begin as soon as the weather permits. The mill is expected to be completed or started in July.

—Massachusetts, North Oxford. The Thayer Woolen Co. has leased the buildings of the Oxford Dye Works from Michael Degnan, proprietor, and are operating one set of cards, one mule and fourteen looms, installed, on satinets, union, etc.

—Massachusetts, West Millbury. A. D. & W. W. Windle, dealers, scourers and carbonizers, wool, wool stock, etc., are adding a dyeing department for dyeing raw stock and piece goods.

—Pennsylvaia, Philadelphia. Stinson Brothers, proprietors of the Fairhil. Carpet Works, will erect an addition to their carpet mill, located at Huntington and Fairhill streets. It will be a brick plant 74 by 8 feet of slow burning modern factory construction and will cost about $8000.

—Pennsylvania, Philadelphia. The five art square looms operated by Archibald Holmes & Son, in their mill, have been sold to Geo. Carson & Son, who have installed them in their plant on Hancock St., above Lehigh Ave.

—Pennsylvania, Philadelphia. The James Dunlap Corpet Co. is adding 50 new looms to their equipment, which will give a total of 159 when all are in operation.

—Rhode Island, Harrisville. The Glen Worsted Mills are to add ten new looms to the plant.

—*Rhode Island, Hope Valley. A new building, which will be used for a picker house is being erected by Akers & Taylor (Charlton, Mass.) who recently secured the Hope Valley Woolen Mill.

—*South Carolina, Gaffney. The Gaffney Carpet Mfg. Co., whose plant is in the hands of H. D. Wheat, recently appointed receiver, and who will continue operating same, is reported to install additional looms in the mill.

Mills Shutting Down.

—*Indiana, Peru. The Peru Woolen Mills, operated by the Turner Manufacturing Co., recently reported assigned, has been shut down indefinitely, the raw material on hand having been used.

—New York, Dryden. The Dryden Woolen Mill, making blankets, has closed down for several weeks for some necessary changes. Cloth will be made afterward on part of the looms.

Knit.

New Mills.

—Alabama, Alexander City. All the machinery of the R. A. Almand knitting mill, at Washington, has been sold to Benjamin Russell, who will operate same at this place.

—*Canada, Hamilton. The Chipman-Holton Knitting Co., recently incorporated with capital stock of $150,000, with F. L. Chipman (Easton, Penn.) president and W. A. Holton (Hamilton,

Can.) treasurer, expects to begin production of hosiery about April, 1902. They have leased a building and are making additions. A dye house will also be attached to the plant.

—*Connecticut, New Britain. The new concern known as the Linen Underwear Co., which proposes starting up a knitting mill, is negotiating for the brick building on Church St. for their use.

—*Georgia, Tallapoosa. A knitting mill will be established here by William H. Kimball and W. C. Kimball. Part of the machinery has been ordered already and the plant is expected to start April 1st. This undoubtedly refers to the plant in which Justin C. Jackson was previously reported interested.

—*Indiana, Huntington. In the summer of 1901, several reports were published relative to the establishment of a full fashioned hosiery knitting mill at this place. At that time the matter was dropped. We can now report almost positively that in all probability the plant will be running within a few months.

—Kentucky, Mayfield. K. Reynolds is organizing a knitting mill company to erect a knitting mill at this place. Capital stock will be $30,000. The factory will install 40 machines and begin work with about 80 people.

—Michigan, Detroit. The Pioneer Buffalo Coat Co. is the name of a new concern which started operations Feb. 1st, making Russian Buffalo and Astrachan coats. They have purchased the plant of the Nightingale Woolen Mills at Defiance, Ohio. William M. Finck is president of the company and Conrad Speck, Jr., treasurer. They are erecting a new building which will be completed April 1st.

—New York, Canastota. A new knitting mill will be located here, which will employ at first about thirty hands. E. E. Randell is the proprietor and has already contracted for a gasoline engine to supply the power. The definite location of the new mill is not known yet.

—*New York, Hoosick Falls. The Meeker Knit Goods Company, recently established, has been incorporated as the Falls Knitting Company. Louis Haussler is president, M. Lurie, secretary, Francis Riley, treasurer, and J. H. Meeker, manager. The company will manufacture balbriggan underwear, and it is proposed to commence work with 40 hands and increase this number to about 75 hands. The capital stock is $15,000, of which $10,000 has been secured.

—New York, Rochester. The Acme Hosiery Company has been incorporated with capital stock of $6000. The directors are J. E. Palmer, H. J. Marsh and L. J. Gruber. They will probably operate L. J. Gruber's mill.

—New York, Utica. A new concern, known as the Fisher Manufacturing Co., has been incorporated with capital stock of $50,000 to manufacture knit goods. M. J. Fisher is president and manager and B. L. Fitch, secretary and treasurer. The company will be located in the building on North Genesee St., now occupied by the Olympian Knit Goods Co., who will soon remove to their new mill at New Hartford. About 50 Fisher knitting machines will be put in operation at first, furnishing employment for about 100 people. They will use electricity for power and lighting.

—New York, Utica. The Albion Knit Goods Manufacturing Co. has been formed by John Morgan and Alfred Morgan to manufature sweaters, golf jackets, etc.

—Pennsylvania, Philadelphia. The Roxford Knitting Company, Lehigh Avenue and Front St., has purchased a lot of land, corner Randolph and Jefferson streets, and will erect a new mill, about 200x60 feet, 6 stories, of slow-burning mill construction. There will also be a one story engine and boiler room and dye house, about 30x170 feet. Work will be started soon on construction of the building, contract for erection of which has been awarded to Wm. Steele & Sons.

—*Pennsylvania, Plymouth. The Thomas West Knitting Mill has been removed to Watsontown and not to Berwick as formerly expected, and will be put in operation about March 1st.

—Pennsylvania, Reading. A new hosiery mill has been started by Drs. J. K. Seaman and DeLong in the third floor of the Reading Industrial Building, for making men's half hose. It is thought that the plant will be increased shortly.

—Pennsylvania, Reading. Articles of incorporation will be filed for a new knitting mill, which will be known as the Pennsylvania Knitting Mills Co. Capital stock will be $5000; incorporators Edward S. Kremp, Philip A. Bushong, Edward E. Rieger. The plant is expected to start this spring.

—Pennsylvania, Shamokin. W. F. Taubel of Riverside, N. J., is starting up a branch mill at this place, where cheaper grades of hosiery will be made, the dyeing and finishing being done at his Riverside mill.

—*Texas, Fort Worth. The project of locating a knitting mill now seems to be an assured fact. This refers to the one in which the Board of Trade is actively interested. They are also trying to induce a woolen manufacturer to locate a mill here.

Enlargements and Improvements.

—Illinois, Chicago. The Paramount Knitting Company has increased its capital stock from $50,000 to $100,000.

—Kentucky, Paducah. The Paducah Textile Company has been incorporated with a capital stock of $20,000 to operate Alden Knitting Mills. More machines will be installed.

—Minnesota, Duluth. Nelson Bros. have purchased a larger building, which will enable them to enlarge their plant considerably.

—*New York, Brooklyn. The Standard Knitting Mills Co., which is erecting a new plant at Germania Heights in the Ridgewood District, expects to have same ready to start operations, July 1st. A new bleach and dye house, 50x75 feet,

will also be built. A steam power plant will be installed. Employment will be furnished to about 250 people.

—New York, Poughkeepsie. C. F. Hoag, proprietor of the Lindenwald Mills, who recently purchased an additional building here, expects to have same in operation March 1st. Forty new knitting machines will be put in for making sweaters, gloves, toques and fancy knit goods.

—*New York, Rome. The Fort Stanwix Knitting Co., previously reported having made arrangements for taking over orders of the Wm. Nuttal Mills, have added 13 more knitting machines to the plant, giving them a total of 26 machines.

—North Carolina, Newberry. The Newberry Knitting Mill will soon make arrangements for adding a dyeing department to their mill.

—*North Carolina, Newton. The Newton Hosiery Mill informs us that they have just added 45 new machines, giving the plant a total of 150 machines. During 1902 they contemplate installing from 50 to 100 machines.

—*North Carolina, Winston-Salem. It is reported that the Shamrock Knitting Mills, recently started, will increase their capacity.

—*Pennsylvania, Philadelphia. David Block, who has started up a knitting plant as the U. S. Knitting Mills has taken as his partner, Max Reinheimer, who puts in more capital. Additional machinery will be installed.

—Pennsylvania, Philadelphia. It is reported that the Frankford Hosiery Mills, which recently purchased a large plot of land, contemplate erecting a new hosiery mill.

—South Carolina, Manning. W. Scott Harvin proposes installing machinery for making his own boxes and is getting prices and information on the necessary machinery.

—Wisconsin, Milwaukee. The National Knitting Company intends to erect a new building.

Mills Starting Up.

—*Florida, Jacksonville. The new plant of the Jacksonville Knitting Mills replacing the one destroyed by fire several months ago, has begun operation. Company has capital stock of $25,000 and operates 25 knitting and 50 sewing machines, on ladies' ribbed underwear. Additions are expected to be made during the summer.

Silk.

New Mills.

—*Canada, Montreal. It is stated that Belding Brothers, Belding, Mich., are going to erect a new silk mill at this place.

—*Connecticut, Watertown. The Heminway & Bartlett Silk Company reported last December to add about 2000 square feet to the mill in the spring, has increased the capital from $50,000 to $75,000.

—*Connecticut, Willimantic. The stockholders of the Windham Silk Co., which was incorporated about a year ago, have voted to increase the capital stock from $50,000 to $100,000. The new stock has been almost subscribed for and will be invested in new machinery.

—New Jersey, Bayonne. Schwarzenbach, Huber & Co. have leased a large building here, which they will equip at once as a silk plant. They expect to have same running in about a month.

—*New Jersey, Jamesburg. The new mill proposed by the Jamesburg Improvement Co. will be built on the old carp pond bed, now dry. It will be a two-story building, 124 by 40 feet. Work on construction will begin as soon as the weather permits.

—*New York, Buffalo. The Duffy Silk Mills at Phenix, N. Y., have been incorporated as the Duffy Silk Co. The stockholders and directors are Bernard Duffy, Charles G. Duffy and A. F. Nellis. They will soon start another large mill in Buffalo, N. Y., equipping same with new and modern machinery for the same line of work that they now do at their Phenix and Fort Plain Mills (throwing). They will run with electric power in Buffalo.

—New York, Hornellsville. It is rumored that the Liberty Silk Mill will start a branch plant in Canisteo.

—*New York, Ogdensburgh. The question regarding the site of the new proposed silk mill has been definitely decided. Albert Stern and R. I. Kohen, representing the Manhattan Silk Co., picked out amongst the lots offered the one situated between Kiah and Barre Streets. This prosperity has been presented to the Ogdensburgh Improvement Co. for the purpose of maintaining thereon a manufacturing industry and the new mill will be the first factory erected on this lot. It is expected that a company will be formed within the next week with a capital of $40,000 to realize the project.

—*Ohio, Marion. The Susquehanna Silk Mills, Sunbury, Penn., which are to erect a new plant at this place, expect to have same ready for production of goods, September, 1902. They will manufacture broad silks. They are in the market for much of the necessary equipment.

—*Pennsylvania, Berwick. The new silk plant established here by F. Q. Hartman and others, will be operated under name of the Colonial Spinning Mills.

—*Pennsylvania, Denver. Mr. P. W. Brubaker, a member of the building committee, is now engaged in making the drafts for the new building to be used by the firm of Westerhoff Bros. & Napier. It will be built of brick, 40 by 100 feet in size and three stories in height, with a boiler house attached to it. Work will begin as soon as the weather permits. The building committee consists of P. W. Brubaker, Isaac Miller and Dr. W. Fink. Fifty looms have already been ordered.

—*Pennsylvania, Lebanon. Miller & Ward, manufacturers of silk at Paterson, N. J., will erect a silk mill here. It will be a throwing mill, in which ribbons principally will be manufactured. A large number of hands will be employed.

—Pennsylvania, Philadelphia. Charter of incorporation has been granted to the Karl Schlatter Dye Works, capital $30,000.

—*Pennsylvania, Renova. Walder & Arbenz may move their silk mill from Hoboken, N. J., to Renova, provided satisfactory inducements are given by the Board of Trade. It is proposed to erect a three-story brick building with an equipment of about 200 looms, 100 to be installed at first. The cost of the plant is estimated at about $30,000, for which stock will be issued. It is hoped that the bulk of it will be subscribed for in Renova.

—*Pennsylvania, Stroudsburg. The mill started here Feb. 1st by Valentine Bliss, on commission throwing, is equipped with 1000 spindles. Steam power is used.

—*Pennsylvania, Williamsport. A charter has been granted to the Susquehanna Dye Works. Capital, $250,000.

Enlargements and Improvements.

—*Massachusetts, Indian Orchard. The new dye house of the Indian Orchard Company will be ready within a week's time.

—*Michigan, Belding. The Belding Mill contracted for an addition to the mill which will consist of a four-story building, 202 feet in length at the cost of $40,000.

—Pennsylvania, Pottsville. The Penn Textile Mfg. Co. has recently installed a plant for dyeing and bleaching hosiery and underwear. They will also dye and bleach cotton in skeins and warps. The capacity of the plant will be 10,000 lbs. per day.

—*Rhode Island, Valley Falls. Reiling, David & Schoen, silk manufacturers, are reported to consider the erection of another large weave shed. Dwight Seabury is the architect.

Mills Starting Up.

—*North Carolina, Kernersville. J. M. Greenfield's mill, reported as soon to be started up, is equipped only with knitting machines for making 84 needle half hose, and will not make yarn as erroneously reported before. C. B. Johnson will be the superintendent.

—*Pennsylvania, Pottstown. The new silk mill, erected by the Champion Silk Mill has been put into operation. The plant starts with about 50 employees and 24 spooling machines. It will run to its full capacity as soon as it is possible.

Fires.

—Canada, Toronto. The plant of the Merchant's Dyeing and Finishing Co. has been completely burned out. The loss is estimated to amount to about $100,000, covered by insurance.

—New Jersey, Paterson. Charles Dempwolf, Jr., manufacturers' agent and dealer in mill supplies, formerly at 211 Market St., was one of the sufferers from the great fire, and has lost everything. He proposes to start again, however, and would like to hear from manufacturers of supplies and machinery relative to new stock.

—*New York, West Eaton. The large plant of the West Eaton Woolen Co., W. A. Frazer, sole proprietor, has been destroyed by fire. The total loss on building, machinery and stock is estimated at $25,000. Plans for the future have not yet been definitely decided upon.

—Ohio, Columbus. The rug factory operated by D. M. Ferguson, with John Hayles, as superintendent, making rugs from old carpets, has been partially destroyed by fire. This plant had an equipment of 11 looms, with dye house attached.

—Pennsylvania, Mechanicsburg. A knitting mill at this place has been destroyed by fire. Loss is estimated at $5000.

—Pennsylvania, Philadelphia. The cotton waste mill of George Barber, Trenton Ave. and Tioga St., has been seriously damaged by fire. The loss will probably reach $5000.

Failures and Suspensions.

—Massachusetts, Hampden. John Kenworthy has filed a petition in bankruptcy, with liabilities placed at $19,594, and assets of $14,274. The secured claims are estimated at $12,263 and the unsecured $6582.

Facts and Gossip.

—Alabama, Anniston. It is stated that Stephen N. Noble is interested in erecting another cordage plant at this place.

—Connecticut, Dayville. The Atawaugan Co. is negotiating for Dayville Woolen Co.'s property, and if this can be satisfactorily effected, they will equip it for a cotton mill.

—*Connecticut, New London. The New London Steam Woolen Mill will be dismantled. Frank E. Gledhill, who purchased all the machinery, will break it up and clear out the mill.

—Georgia, Athens. Capt. J. H. Rucker is considering the project of establishing a knitting plant in his office building, which is well adapted for such a purpose. If found to be a payng investment, a new mill will be erected.

—Georgia, Atlanta. The Cherokee Red Dye Works, Newton Upper Falls, Mass., with offices at Boston, Mass., have opened a branch here under the supervision of James H. Pratt.

—*Georgia, Barnesville. The Barnesville Company, whose establishment has been shut down since the middle of December, expects to have the plant running again soon.

—Georgia, High Shoals. A company is projected to erect a knitting mill at Price's grist and flouring mill, capital $20,000, of which three-quarters have been subscribed for already. The enterprise is in the hands of J. D. Price.

—*Georgia, Tallapoosa. It is reported that the capacity of the cotton yarn plant projected, will be from 3000 to 5000 spindles.

—*Georgia, Waynmanville. The Waynmanville Cotton Mills have been sold at auction to the Maddox-Rucker Banking Company for $7000. It is thought that Mr. Maddox will put the mills in operation.

—*Kentucky, Mayfield. It is rumored that another company will be formed to manufacture the same class of goods that were made by the Mayfield Woolen Mills, which are about to move their plant to Louisville. It is said that the new concern will purchase the houses and lots owned by the Mayfield Woolen Company for this purpose and also a part of the old machinery left by the company.

—Massachusetts, Westfield. Frank L. Worthy, West Springfield, has purchased Edwin L. Smith's interest in the W. Warren Thread Works, where he will assume the position of treasurer. Mr. Worthy has been formerly connected with the firm as vice-president and a member of the board of directors. The company has increased the capital stock from $125.000 to $200,000.

—Michigan, Minden. John Moore will remove his small woolen mill to Deckerville, Mich.

—*Minnesota, Fergus Falls. J. E. Evans, previously reported as interested in establishing a new woolen mill, has purchased the Fergus Falls Woolen Mills, of which Walter Hogan is the owner and proprietor. Joseph Rose is associated with Mr. Evans in the enterprise. They will take possession of the mill on March 1st.

—New Jersey, Burlington. Charles P. Farner is reported interested in establishing a silk factory in building rented corner Pearl and Tatham Streets.

—New Jersey, Newark. A new concern, known as the C. I. L. Fabric Co., has been incorporated with a capital stock of $100,000, to manufacture textile fabrics. The incorporators are Edward Farmer, William R. Colton and A. Herding-Colton.

—New Jersey, Paterson. Charles Dempworth, Jr., dealer in mill supplies, was burned out in the big fire at Paterson, and has temporarily established himself at Room 8, Central Building. His entire stock was destroyed, including samples, and he would like to receive from manufacturers of mill supplies, catalogues and prices with best discount, etc.

—New Jersey, Paterson. The Daniel J. Sheehan Company has been incorporated with capital stock of $100,000 by Daniel J. Sheehan, F. A. Weidman and Geo. S. Coombs. They will operate the silk dyeing establishment formerly carried on by D. J. Sheehan.

—New Jersey, Salem. The Priscilla Knitting Mills are looking out for another location where more capital is available for the enlargement of the business.

—*New Jersey, Trenton. Samuel K. Wilson's two woolen mills will be sold at auction on March 19th. They have been appraised at $115,000.

—New York, Albany. Fuld & Hatch, manufacturers ribbed underwear, have been incorporated as the Fuld & Hatch Knitting Co., with capital stock of $250,000.

—*New York, Cohoes. The machinery in the Egbert Woolen Mill, which has not been in operation for some time, is being sold by William P. Adams, owner of the mill. The plant is to be leased shortly by another industry.

—*New York, Jamestown. The business formerly conducted by Preston & Mackey has been incorporated as the Chatauqua Towel Mills. The directors are Edward M. Mackey, William C. Briggs, Arthur C. Wade. The capital stock is $50,000.

—New York, New York. The Acme Knitting Mills have been incorporated, with capital stock of $10,000, by Isabelle L. Taplitz, S. B. Taplitz and Samuel Baum.

—New York, Rochester. The Rochester Cotton Mill, owned by the heirs of Garner Estate, has been sold to the Rochester Gas and Electric Co. for $110,000.

—North Carolina, Fayetteville. The Fayetteville Cotton Mills are reported in financial difficulties. H. W. Lilly is receiver.

—*North Carolina, Scotland Neck. The Crescent Hosiery Co., recently formed, will not make any improvements to the Lockland Mills, which they will operate under the new name, the name "Lockland Mills" being an infringement on certain copyright held by other parties.

—*North Carolina, Shelby. The Lauraglenn Mills have been re-organized as the Burton Mills, with R. B. Miller, general manager. The mills are now in operation, making cotton yarns, ball twine, wrapping twine and carpet yarns, with 3000 ring spindles.

—North Carolina, Statesville. R. E. Nooe of this place is getting information on machinery for making felt or cotton bagging, with a view to possibly starting up a plant.

—*North Carolina, Tarboro. An offer was made by Miss Harriet Wilson, previously manager of the River View Knitting Mill, which was recently destroyed by fire, to start a new knitting mill at this place, if a suitable location can be secured. A company may be organized.

—North Carolina, Washington. It is reported that Mr. J. Haveans is interest-

ed in the erection of a cotton batting and comfort mill and is desirous of corresponding with makers of the required machinery for such a mill.

—*Ohio, Cleveland. The schedule of assets and liabilities of the F. Muhlhauser Co. have been filed, the assets amounting to $715,389 and the liabilities to $261,146.

—Oklahoma Territory, Shawnee. The Shawnee Electric Light and Power Company is reported as considering the erection of a 5000-spindle cotton mill.

—*Oregon, Brownsville. The Eagle Woolen Mills have been sold to Emil Koppee, Seth Raistrie and Joseph Cordingly of Salem.

—Pennsylvania, Blain. J. B. Moreland has purchased an interest in the Perry Knitting Mill, A. B. Couch, proprietor, and the mill will now be run under firm name of Couch & Moreland. Operations have not yet been started up in the plant, recently removed here from Andersonburg, on account of not receiving yarn stock.

—Pennsylvania, Churchtown. It is reported that a company is being organized here to establish a knitting mill and that half the necessary stock has already been subscribed.

—Pennsylvania, Norristown. A charter of incorporation has been granted to Rambo & Regar, operating the Globe Knitting Mills, and the capital stock of $400,000 has been fully paid in. The president is J. S. Rambo, and secretary and treasurer, H. K. Regar.

—Pennsylvania, Philadelphia. Aiman & Harper, manufacturers of woolen dress goods, Coral and Adams Streets, have dissolved partnership. The business will be continued by the senior member of the firm, Richard H. Aiman.

—*Pennsylvania, Philadelphia. The Armure Tapestry Mill has been incorporated with a capital stock of $1000.

—*Pennsylvania, Philadelphia. The McCallum Mills (Wayne Junction), recently sold by the Sheriff, under foreclosure proceedings, were purchased by Attorney W. S. Price for $100,000. These mills were formerly operated on carpets.

—Pennsylvania, Williamsport. The small knitting factory of G. W. Bailey at So. Williamsport has been wrecked by the explosion of the boiler.

—Rhode Island, Potter Hill. The Campbell Mills are reported as having been purchased by the Hazards of Peace Dale.

—*South Carolina, Camden. The De Kalb Cotton Mill intend s to increase its capital stock from $200,000 to $300,000. Five thousand spindles and 100 looms will be added. This will give the mill a total of 15,000 spindles and 360 looms.

—South Carolina, Warrenville. It is reported that Dr. J. B. McMillan and Capt. S. W. Howland of this place are interested in a new cotton mill projected near here. Site has been purchased and arrangements are being made for the buildings, equipment, etc.

—*Tennessee, Rockwood. For the new knitting mill, which will be erected at this place, arrangements are about perfected to raise local capital of $13,000; $3000 more will be required.

—Texas, Galveston. M. Lasker of this place is interested in establishing a bag mill either at Dallas or Fort Worth.

—Texas, Jefferson. It is reported that a new cotton mill will be organized. T. D. Rowell and W. S. Haywood are among those interested in the project.

Textile Patents.

Continued from page 457.

Machine for Unraveling Knit Goods. 692,196. Louis A. Desy, Montreal, Canada, assignor of one-half to Michel Benoit, Montreal, Canada.

Rib Knitted Pile Fabric. 693,409. Geo. A. Leighton, Manchester, N. H., assignor to Leighton Machine Co., Manchester, N. H.

Spinning Ring. 693,797. David Harrington, Worcester, Mass.

Self Threading Loom Shuttle. E. S. Stimpson, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

Spinning Machinery Doffing Apparatus. 692,491. Alfred Stell and Geo. Stell, Steeton and John Stell, Keighley, England.

Swivel Loom. 691,927. R. Atherton, Paterson, N. J.

Spinning Machinery Drag Device. 691,992. Thomas Watson, Bridge of Weir, Scotland, assignor to E. S. Coats, Paisley, Scotland.

Shuttle Driving Mechanism. 692,843. W. C. Free, Chicago, Ill.

Spinning Machine Roll. 692,855. J. B. Hudson, Charlotte, N. C.

Tucking and Welting Attachment for Knitting Machine. 693,397. U. D. Huse and L. C. Huse, Laconia, N. H., assignors of one-third to W. L. Huse, Laconia, N. H.

Weft Replenishing Loom Detector Mechanism. 692,591. W. H. Baker, Central Falls, R. I., and Frederic E. Kip, Montclair, N. J.

Warp Stop Motion for Looms. 692,431. John V. Cunniff and E. Cunniff, New Bedford, Mass., assignors of one-half to A. E. Hathaway, New Bedford, Mass.

Woven Pile Carpet. 691,889. Walter Benham, Philadelphia, Pa., assignor to J. & J. Dobson, Philadelphia, Pa., co-partners trading as John & James Dobson.

—The Burt Mfg. Co. of Akron, Ohio, report busy times with their London agency, having made an important shipment of Cross Oil Filters and Burt Exhaust Heads there last month. These are two American devices which will help the British manufacturer solve his present problem of lessening cost of production, as both of them have economy as their prime advantage.

PERSONAL RECORD.

Cotton.

—James M. Butler, who has been foreman for the past year and a half of the American Loom Co., Readville, Mass., has accepted the position as boss weaver for the Gibson Cotton Mills, Maryville, New Brunswick, Can. Thomas Shaw, formerly of the Tremont & Suffolk Mills, Lowell, Mass., is the agent of the mills.

—James H. Blades, superintendent of the Lorraine Manufacturing Co.'s mill at Westerly, R. I., has been succeeded by R. B. Meikle, formerly of the Barnaby Manufacturing Co.'s mill at Fall River, Mass.

—A. E. Bosworth has resigned as overseer of carding at the Lonsdale Mills, Ashton, R. I., to become superintendent in Georgiaville, where he formerly was boss carder.

—W. P. Bennett, formerly of the Cabarrus Cotton Mill, Concord, N. C., is in charge of the carding and spinning of the Ada Mill, Charlotte, N. C.

—William Boone has been made overseer of the cloth room of the Loray Mills, Gastonia, N. C.

—W. P. Benwich is carder and spinner for the Ada Manufacturing Co., Charlotte, N. C. He succeeds M. L. Moore, resigned.

—C. A. Cole is master mechanic at the Manchaug (Mass.) Co., succeeding C. A. Praray.

—D. E. Clough, overseer of spinning, spooling and twisting at the Camden, S. C., Mill, has changed to the Edna Mill, Reidsville, N. C., where he is overseer of spinning.

—Robert Cain is the new overseer of weaving at the Chewalla Mills, Eufaula, Ala. He was formerly of the Avondale Mills, Birmingham, Ala.

—J. W. Chadwick, late superintendent of the Roxboro Cotton Mills, Roxboro, N. C., is the new superintendent of the Knoxville Cotton Mills, Knoxville, Tenn.

—John J. Connell, formerly superintendent of the Cohannet Mills, Taunton, Mass., of the New England Cotton Yarn Company, has gone to Chattanooga, Tenn., where he will assist in the reorganization of a newly established cotton mill.

—J. P. Dillard, at a recent meeting of the directors of the Canton Cotton Mills, Canton, Ga., was elected superintendent.

—J. L. Eddleman has resigned as superintendent of the Bamberg Cotton Mill, Bamberg, S. C., to take charge of the Grendel Mills, Greenwood, S. C.

—Arthur C. Freeman has resigned his position as superintendent of the Clearwater Bleachery Company, Clearwater, S. C., and has returned to his home in Somersworth, N. H.

—A. B. Greenough has been appointed to succeed Joseph Brierley as carder at May's Landing, N. J.

—J. F. Gamage, secondhand in the Globe Yarn Mills, Fall River, Mass., has accepted the position of overseer in the twisting room of the Samoset Mfg. Co., Valley Falls, R. I.

—Frank W. Hicks, overseer of the waste department of the Tremont & Suffolk Mills, Lowell, Mass., has resigned, to enter the employ of the Davis & Furber Co., North Andover.

—B. F. Houston, formerly at the Elk Cotton Mill, Fayetteville, Tenn., is now superintendent at the Chronicle Mill, Belmont, N. C.

—T. B. Hitchcock, a graduate of the Lowell Textile School, Lowell, Mass., has been appointed overseer of waste carding and spinning at the Tremont & Suffolk Mills, in Lowell.

—W. P. Hunt has resigned his position with the Cameron Manufacturing Co., Concord, N. C.

—J. T. Kersey is boss spiner of mills Nos. 1, 2 and 8 of the Pacolet Mfg. Co., Pacolet, S. C.

—Andrew J. Kelly has left the Boston Mfg. Co., Waltham, Mass., and taken the position of overseer of carding and combing for the West Boylston Mfg. Co., Easthampton, Mass.

—Jeremiah Mahoney, boss slasher tender at the Bristol Mill, New Bedford, Mass., has gone to Easthampton, Mass., to take charge of the slasher, spooling, warping and spinning departments. This is the mill which Superintendent George A. Ayer recently took charge of.

—John G. McFadden has accepted the position of superintendent at the Nottingham Mill, Providence, R. I. Mr. McFadden was last employed as overseer of carding at the Ann and Hope Mill, Lonsdale.

—Harold B. Mowrey of New York, who for the past few years has been buyer for the different bleacheries of the United States Finishing Co., has become business manager of the plant at Sterling, Conn.

—A. Nuttall succeeds his father, Benjamin Nuttall as superintendent of the Rodman-Heath Cotton Mill, Waxhaw, N. C. The latter has accepted the superintendency of the Barton, Ark., Premier Mill.

—Paul Pelletier has been appointed overseer of ring spinning at the Canoe River Mills, Taunton, Mass.

—S. A. Phillips, formerly of the Social Mills, Woonsocket, R. I., has been engaged to take charge of the spinning department at the Samoset Mills, Valley Falls, R. I., to succeed John Brady.

—William Greene Raoul, Jr., late of Waycross, Ga., has been appointed superintendent of the Irwin Cotton Mills, Fitzgerald, Ga., and took charge there February 24th.

—M. O. Rafter has accepted the position of night superintendent of the Lumberton Cotton Mills, Lumberton, N. C.

—James Shirley, master mechanic at the Saunders Cotton Mills, Saundersville, Mass., has resigned his position to accept a similar one at Baltic, Conn., Cotton Co.

—Joseph Smith, overseer of the white room at the Arnold Print Works, North Adams, Mass., has resigned, after 15 years' service with the works, and is succeeded by Hughes Gillies.

—W. J. Schroeder has succeeded G. H. Peckham as superintendent of the Rushton Cotton Mills, Griffin, Ga. Mr. Peckham is now superintendent of the Selma, Ala., mills.

—S. B. Shipp, of Stonewall, Miss., took charge on February 1st, of the Pelham Cotton Mills, Pelham, S. C. He is a brother of George F. Shipp, who has been acting as superintendent of the Pelham Mills for some time, and who will continue in that capacity, devoting his time hereafter exclusively to the inside work of the plant.

—J. R. Stafford, for some years superintendent of the Wauregan Mills, Providence, R. I., owned by B. B. & R. Knight, has resigned that position and a Mr. McFadden, from Lonsdale, has been appointed to the position.

—H. Gould Welborn has accepted a position as designer with the Laurens Cotton Mills, Laurens, S. C. He was formerly overseer of carding and spinning for the Nokomis Cotton Mills, Lexington, N. C.

—E. W. Worth, formerly superintendent of the Juanita Mills, Burlington, N. C., is superintendent of the new Oxford, N. C., Cotton Mill, just starting up.

—N. S. West is the new overseer of weaving at the Dublin, Ga., Cotton Mills.

Woolen.

—The Verd Mont Mills at Ludlow, Vt., have plenty of orders and are rushed with business. They have just added a new fuling mill. The overseers are: Charles McDougall, superintendent, assisted by his son, George R. McDougall, who also has charge of carding, spinning and picking. William M. Brown has charge of weaving and John Came has charge of finishing.

—The Amsterdam (N. Y.) Woolen Company have resumed operations at their plant with a new force of overseers, including Samuel Waterbury as superintendent. Sanford Hogle is overseer of carding, and William H. Harrison, overseer of spinning.

—Joseph Appleyard, late of Auburn, Mass., has been engaged as boss dyer at the Rockstone Mills, Downingtown, Pa.

—William Ballantyne, late of Linn Woolen Co., Hartland, Me., has secured the position of boss finisher with J. D. Clark Co., Rochdale, Mass.

—Fred A. Blackburn, boss dyer for Walter Aiken's Sons, Franklin Falls, N. H., has resigned.

—Frank H. Carpenter, assistant superintendent at the Sawyer Woolen Mills, Dover, N. H., for several years past, succeeds Lewis Anderson as agent of the Anderson Mills of the American Woolen Company, Skowhegan, Me.

—Gustave Coster, of Medway, Mass., has gone to Springvale, Me., to accept the position of boss dyer.

—Thomas Cadzan, formerly boss weaver at the Northern Ohio Blanket Mills, Cleveland, O., is now filling a similar position in Dresden, O.

—E. W. Cook, formerly finisher at Taft, Burbank & Murdock Mills, Proctorsville, Vt., has recently taken charge of the wet finishing at the Rock Mills, Rockville, Conn.

—Patrick Clough, formerly dyer at the Ashland Woolen Mill, Ashland, N. H., has acepted the position of overseer of dyeing at the Burlington mills of the American Woolen Co., Winooski, Vt.

—Mr. Crane, superintendent of the J. L. & T. D. Peck Mfg. Co., Pittsfield, Mass., has resigned.

—John Cornell is overseer of carding at Carter & Rogers' mills, Claremont, N. H.

—Joseph Dodsworth, for a number of years with the Continental Worsted Mills, Philadelphia, Pa., has recently accepted a position as wool inspector for the Southwark Mills Co., Philadelphia, the latter company having purchased the former mill, also mills formerly owned by George Campbell & Co., on 31st and Read Sts.

—William Dow, recently of New Bedford, Mass., has resumed his old position as dyer at the Saco River Woolen Mills, West Buxton, Me.

—M. R. Dredge, superintendent for the Reedsburg Woolen Mills Co., at Reedsburg, Wis., has resigned, and accepted a similar position with Meek Bros., at Bonaparte, Iowa.

—J. H. Evans is with the Beaver Dam (Wis.) Woolen Mills, employed in the capacity of overseer of carding.

—H. W. Fitzroy is finisher at the French River Textile Co., Mechanicsville, Conn., succeeding Fred Dixon.

—O. Fendison has succeeded Louis Cirlack as superintendent of the Eagle Lake Woolen Company, Jefferson, Mass.

—C. M. Fitzgerald, formerly of Piqua, O., is now superintendent of the Charles River Woolen Co., Franklin, Mass.

—G. W. Greenbank, formerly with E. E. Hilliard Co., Buckland, Conn., as a carder and spinner, is now with George E. Kunhardt, Lawrence, Mass.

—M. H. Hutt, overseer in the ingrain department of the Hartford Carpet Corporation, Thompsonville, Conn., severed his connection with that concern recently to accept a similar position in Philadelphia.

—James Hardy is in the employ of Norwalk Mills Company, Winnipauk, Conn., as overseer of carding.

—W. H. Hodgson, designer at the Standish Worsted Co., Plymouth, Mass., has resigned, to accept a position as designer at the Fulton (N. Y.) Worsted Mill of the American Woolen Co.

—William Hall has accepted the position of overseer of finishing with the Burlington Mills, Burlington, Vt. These are the mills recently purchased by the American Woolen Co. Mr. Hall was formerly a finisher at the Dobson Mills, Pittsfield, Mass.

—Eugene T. Kiely, Seneca Falls, N. Y., has secured the position of fixer with the Dunn No. 2 Mill, Woonsocket, R. I.

—George Lewis is master mechanic for the Haile & Frost Mfg. Co., Hinsdale, N. H.

—M. McCall is carder at the Lebanon Mills, Lebanon, N. H. He was formerly with the Winooski Mills, Winooski, Vt.

—W. O. Morse is overseer of weaving at the Riverside Mills, Lebanon, N. H., vice F. C. Morse, promoted to superintendent.

—Frank McCauley, formerly overseer of dressing at the Cowan Woolen Co., Lewiston, Me., and later of the Weybosset Mills, Providence, R. I., is the new overseer of dressing at the Burlington Mills of the American Woolen Co., Winooski, Vt.

—Charles A. Martin, of Clinton, Mass., is the new boss spinner at the Columbia Worsted Co., Wallingford, Pa.

—A. Melrose, formerly dyer at the Newburg (N. Y.) Woolen Mills, is the new dyer at the Saxtons River (Vt.) Worsted Mill.

—Daniel McGuire, formerly of Clinton, Mass., is now with the Saxtons River (Vt.) Worsted Mill, as overseer of spinning.

—John H. Merrill has been appointed superintendent of the Saranac Worsted Mills, Waterford, R. I.

—Joseph P. Moore, overseer of carding with the Phoenix Mills Company, Manayunk, Philadelphia, has resigned. He is now in the employ of Wm. Emsley & Bros., yarn spinners of Philadelphia, in a similar capacity.

—Joseph Midgley, Olneyville, R. I., has taken charge of the dyeing at the No. 1 mill of the Briggs Mfg. Co., Ashaway, R. I.

—John J. Peever, formerly of the Crown Mills, Marcellus, N. Y., has been appointed overseer of spooling in George E. Kunhardt's mill, Lawrence, Mass.

—John Powell, who has had charge of the carding at the Meadowbrook Worsted Mills, Falconer, N. Y., has resigned his position there, to take charge of the carding and combing at the Falconer Worsted Mills, Faconer, N. Y.

—Fred J. Rowell, formerly overseer in the United States Rubber Co.'s wool boot department in Woonsocket, R. I., has become overseer of spinning at the Rockfall Woolen Co.'s mill, Middletown, Conn.

—E. C. Reinhardt has resigned as designer for the Saranac Mills, Blackstone, Mass., to accept a position as superintendent of the Rhode Island Worsted Mills, Indian Orchard, Mass.

—George Simmons is overseer of the weaving department at Andrew Howarth & Sons, Rochdale, Mass. Mr. Simmons is a brother of Benjamin Simmons, superintendent, who has been at the mill for the past five years and been meeting with good success.

—F. T. Smith has resigned as boss dyer for Strong, Hewat & Co., North Adams, Mass., where he has been in charge of this department for the past three and a half years.

—John Shea, formerly at the Dews Woolen Co.'s mill, North Dexter, Me., is now in charge of the spinning department of the Saxton's River Woolen Mill, Saxton's River, Vt.

—John Swindells is again boss carder for the Montville Woolen Co., Montville, Conn.

—John H. Shaw has resigned as boss dresser in Sayles & Jenks Mfg. Co.'s mill, Warren, Mass., and has gone to Palmer, Mass., as superintendent in Holden & Fuller's mill. His brother, Wallis Shaw, will succeed him at the Sayles & Jenks mill.

—Cornelius Weeks, formerly overseer of carding in the mills of the Middlesex Company, Lowell, Mass., is now with the American Felt Company, Glenville, Conn. employed in a similar capacity.

—E. P. Woodard, formerly of the Hockanum Co., Rockville, Conn., and later with the American Woolen Co., Plymouth, Mass., has accepted a position as boss weaver and designer for F. S. Mackenzie, Bridgewater, Vt.

Knit.

—C. B. Atkins, formerly of Bennington, Vt., and later overseer of knitting at Waterford, N. Y., is now overseer of knitting at the Kotedsilk Underwear Co., Millbury, Mass.

—James Crowe, overseer of carding for the Troy (N. Y.) Knitting Company, has resigned, and is succeeded by Mr. Whitman. Mr. Crowe has accepted a similar position with the Harder Branch of the Union Knitting Mills, Hudson, N. Y.

—P. H. Dowd is the superintendent of the Orkney Mills, Cohoes, N. Y., manufacturing knit goods.

—John Donahue, superintendent for the Michigan Central Woolen Company, Centreville, Mich., has resigned in order to accept a similar position with Fuld & Hatch, Albany, N. Y.

—Thomas Finney has resigned as superintendent of the J. A. Hover Knitting Mill, Columbiaville, N. Y.

—W. D. Hughes, late at Winchester, Va., and previously at Williamstown, Pa., has been engaged by the Strauss-Kahn Knitting Co., Chicago, Ill., as boss knitter.

—Joseph Moore, superintendent of the Orkney Mills, Cohoes, N. Y., has resigned and gone to Amsterdam, N. Y., where he will hold a similar position.

—John McNamee has resigned his position as secondhand in the knitting department of the Gardiner & Warring Co., Amsterdam, N. Y., to take charge of the knitting department of the Wm. H. Rowe Knitting Co., Amsterdam, N. Y.

—A. K. Maxwell, late of Rome, N. Y., has been engaged by the Globe Knitting Works, Grand Rapids, Mich., as boss knitter.

—Thomas Tinney, superintendent of the knitting mill of J. A. Hover, Columbiaville, N. Y., has resigned.

Deaths.

—Robert Middleton, of the Globe Woolen Co., Utica, N. Y., died February 24th. The deceased was born in the city of Aberdeen, Scotland, May 17th, 1825. His father emigrated with his family to this country in 1840, settling at Middle Gran-

ville, Washington Co., N. Y. At the age if 18, Robert Middleton went to Lowell, and engaged his services for six years in the Lowell Carpet Company. The succeeding seven years he spent with the Merrimac Woolen Co., acting as assistant superintendent of the company for six years. In this capacity he developed surprising capabilities in the management of woolen manufacturing, in which he afterwards gained both fame and fortune. It was during the panic, May 10, 1857, that Robert Middleton was engaged to take charge of the Globe Mill as agent and superintendent, inaugurating an era of prosperity seldom equalled. From the first, Mr. Middleton assumed charge not only of the manufacturing operations of the mill, but also of its business operations, and has continued to direct them to the present. This institution had not been successful as a business enterprise until Mr. Middleton, with the energy and perserverance that have always characerized his career, successfully established a manufacturing industry which is at the present time famed far and near. Naturally of a retiring and reserved temperament, Robert Middleton has found his greatest pleasure in his home and among his intimate friends, and in the natural satisfaction which follows devotion to business, wherein he has found such unusual material success, while at the same time the characteristics and the habits thus formed drew him away from public life and prevented his acceptance of public station, which he might have had, and which he would have honored. He was a long time member of the Wool Manufacturers' Association and one of the prominent figures of the wool manufacturing industry has passed away. Some time ago the Textile World published his portrait and extended history which will be remembered by our readers.

—Matthew Luce, senior member of the well-know wool firm of Luce & Manning of Boston, Mass., died suddenly at his home in that city last month. Heart failure was the cause of his death. Mr. Luce was born in New Bedford in 1844. He came to Boston in 1860 and entered the employ of Faulkner, Kimball & Co., dry goods commission merchants. Later he was instrumental in founding the firm of Manning, Howland, Luce & Co. Later the firm became Luce & Manning, which style has been maintained up to the present time. He was one of the best known men in this city, and in the wool trade, and held many positions of trust and responsibility. He was noted for his broad, charitable nature, and his death was greatly mourned.

—Joseph W. Wattles died at his home in Canton Junction, Mass., February 14, from pneumonia. He had just passed his 77th birthday. He was born and educated in Chaplin, Conn. He was employed as foreman of the Neponset Cotton Mills at Canton Junction for more than forty years, after which he engaged in the manufacture of cotton goods on his own account. He disposed of this business 10 years later, and went to Pembroke, N. H., where he conducted a cotton mill, and from there went to Newburyport, Mass. Some years ago he went into the manufacture of sizing, being associated with his sons at Canton, under the style of L. R. Wattles & Co.

—Albert Knight, a well known mill man and for many years superintendent of the cotton mills belonging to the Quidnick Manufacturing Co., Quidnick, R. I., died at his home in that city, recently. For the past six years he had been an invalid, much of the time being confined to the house. Three sons survive him, all well known manufacturers in Rhode Island.

—Marshall O. West, senior member of West & Simons, cotton and linen manufacturers, who have offices at 256 Church St., New York City, died in the Pensylvania Hospital, Philadelphia. Mr. West was a nttive of East Brookfield, and was 54 years of age. In 1879 with his uncle, Natham C. Pond, he established the firm of Pond, West & Simons for the manufacture of shirts, sheets, pillow cases, tents, etc. The factories have been often enlarged, until the concern is now one of the largest in the country. Upon the death in 1895, of Mr. Pond, the style was changed to West & Simons.

—Jude Taylor, 80 years of age, died in Pawtucket, R. I., last month. Mr. Taylor was born in Edenfield, Lancashire, Eng., and came to this country when 15 years old. He was a calico print engraver, but demand for his work ceased as new methods superseded the old, and he became interested in the manufacture of hair cloth, and in 1863 purchased the plant of the Boston Hair Cloth Company with Charles Payne, with whom he had been in partnership in the calico print engraving business. In 1893, the firm was consolidated with the Pawtucket Hair Cloth Company under the name of the American Hair Cloth Company, of which Mr. Taylor was president at the time of his death. He was also interested in the American Yarn Company, of which he was at one time treasurer.

—James Legg died recently in Boston. Mr. Legg was prominently identified with the woolen industry. He was formerly superintendent for A. L. Sayles & Sons, Pascoag, R. I. Later with his brother he operated the Mapleville (R. I.) Mills. Upon the failure of this concern, he went to Killingly, Conn., where he operated the Whitestone Woolen Mill.

—Robert A. Sykes, aged 74 years, a well-know print works man, died suddenly at New Murdock, Kans. For 16 years he was manager of the Freeman Print Works at North Adams, now the Windsor Print Works. In 1880 he assumed the management of the Oriental Print Works in Apponaug, R. I., and later established a print works at Magog, Can., which was the last of his work in the printing business. Soon after the death of his wife, about seven years ago, he went West and settled on a ranch at New Murdock, where he passed the remainder of his life.

—Henry L. Dempsey, assistant superintendent of the Centredale (R. I.) Company, and bookkeeper of the Stillwater branch of the company, died last month at his home in Stillwater.

—William H. Hurley, Sr., for many years the head of the leading silk importing house in Philadelphia, died early last month from pneumonia, after a week's illness. He was 76 years of age. He is survived by a widow and three sons.

—John McCullough, prominent in the linen trade in New York, died in Brooklyn, last month. He was born in Ireland, in 1848, and came to New York when a young man. In 1894 he became a member and general manager of the Belfast Linen Handkerchief Company of Belfast and New York. He leaves a widow, two sons and four daughters.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc , we will charge the enquirer with the cost of the investigation.

Depreciation of Cotton Machinery.

Editor Textile World:

What percentage should be charged off for depreciation each year of a cotton mill plant?

C. L. C. (168).

This question is one that has perplexed many a mill treasurer, and has been discussed at great length, one of the most able presentations of the subject being contained in a paper presented by Edward W. Thomas, then agent of the Tremont & Suffolk Mills at the October, 1898, meeting of the New England Cotton Manufacturers' Association, in which he discussed the question from the standpoint of assessors' valuation, dividend earning, capacity, cost, etc. We refer our inquirer to this paper for much valuable information on the subject.

An English authority states that a fair average depreciation is 2½ per cent. yearly on buildings and 5 per cent. on machinery, although some concerns use 7½ per cent. and 7½ per cent. on boilers and steam plants. The depreciation each year is figured on reduced value brought forward from preceding year. The tax assessors in Great Britain allow 2½ per cent. depreciation on buildings and 7½ per cent. on machinery other than steam plants. An authority in this country who has had an extended experience gives as his views: At the end of the first five years' service, the plant and machinery have depreciated 9 per cent; at the end of second five years, 30 per cent.; at the end of third five years, 70 per cent.; at the end of fourth five years, 90 per cent.; at the end of 25 years the machinery is valued as scrap. These general statements must, of course, be modified in specific cases. It can readily be appreciated that improvements in certain lines of machinery often render commercially valueless, machinery which may be as good as new for the work which it was originally intended to do. This is one of the stumbling blocks for many unsuccessful mills, whose managers or stockholders cannot bring themselves to the point of throwing out or marking what they call good machinery which has been rendered commercially obsolete by subsequent improvements.

Holes Made in Knitting.

Editor Textile World:

I noticed your reply to the question of "Holes in Knit Underwear Fabric" and venture to express my opinion of the cause of the holes which your correspondent complains of. The principal reason is, that the yarn is too fine for a machine of the gauge mentioned, No. 18 yarn on a machine carrying 10 needles to the inch.

There is a limit, of course, to the sizes of yarn that a machine of any particular gauge will successfully handle, and when this limit is passed either on fine or coarse yarn, trouble is sure to result. In this particular case, they have certainly passed the limit on fine yarn. There may be of course other causes, which only an opportunity to examine the machine will disclose.

Foreman.

Colors on Army Goods.

Editor Textile World:

Does the Government require full indigo blue or will alizarine blue be accepted?

Centre (219).

The Government specifications for indigo blue on goods contains the following clause:—

"COLOR—To be of same shade of dark blue as the standard sample, and to be dyed in the wool with pure indigo of the best quality, bottomed only with Alizarine Red W. B. paste to an extent not in excess of one and one-half (1½) pounds to one hundred (100) pounds of clean wool with usual mordant. Burr or top dyeing not allowed."

For sky or light blue shades nothing but pure indigo of the best quality is permitted.

Cotton and Cotton Goods.

Editor Textile World:

What part of the cotton crop of the United States is manufactured into products other than the coarse goods made

in the Southern mills and the prints made in Northern mills?

Greek (220).

There are no statistics giving the quantity or kind of goods into which the cotton crop is manufactured. A complete list of American mills giving the class of goods manufactured by each, will be found in the Textile World's Official Directory.

We refer our correspondent to an editorial in this issue in which comparisons are made between the North and South as regards the cotton consumed per spindle. In the May, 1901, issue of the Textile World, there appeared a table and chart showing the number of cotton spindles in the different countries of the world.

A Small Bleaching Plant.

Editor Textile World:

Please give me an idea of the equipment of a small plant for bleaching cotton cloth. I desire to do the work on a small scale and to avoid investing a large amount of money in machinery and buildings. Can cotton cloth be bleached without the use of a kier?

Rosewood (214).

We have secured opinions from two practical bleachers on this subject as follows:—

1. "I do not know of any process of bleaching cotton cloth that does not require boiling the goods in a kier. There is no need of an expensive plant for a small production, say from 8000 to 10,000 yards per day. For such a quantity one (1) wooden kier and two (2) small washers fitted with rubber rolls are required. I have had charge of such a plant and have turned out 12,000 yards per day, the goods being duck, percalines, toweling, etc. The round tub or kier should be 8 feet deep by 8 feet in diameter with a vomiting pipe in the centre. The washers are the ordinary yarn tubs fitted with four (4) rollers at the bottom 4 inches in diameter and three (3) at the top, each placed crosswise of the tub."—Crescent.

2. "The question of how to bleach cotton piece goods without the use of a kier or an expensive plant depends upon what class of cotton piece goods are to be treated, whether they are to be dyed or printed. I do not think that any class of goods, if made of Egyptian cotton, can be bleached without the use of a kier. For a small quantity of light goods an ordinary bleaching machine and washer fitted with a steam pipe can be used, the goods being treated in the rope form. An inexpensive, but very satisfactory low pressure bleaching and boiling kier can be made of wood lined with a cement coating of about 1 1/2 to 2 inches thick. It is fitted with the usual grids and upright puffer or vomit pipe. Toweling, sheeting, dress goods, sateens, etc., are now being bleached in this country with a kier of this description. Certain kinds of cloth, such as light flannelettes, can be bleached sufficiently well on the jig for ordinary dyeing or printing purposes. The Bentz-Edmeston process of bleaching is used to some extent in England. The pieces are bleached in the open width in a continuous manner and a sort of kier is used in this process; it is, however, more of a steam chamber than a kier. I have been told by those who have used this process that it succeeds very well."—New Comer.

Polka Dots on Hosiery.

Editor Textile World:

What process besides stamping is used for coloring polka dots on hosiery? What does 40 gauge mean?

Polka Dot (215).

We do not know of any process of coloring polka dots on hosiery other than that in which printing blocks are employed. This subject was fully treated in the December, 1901, issue of the Textile World. Our correspondent will find gauge tables in the Textile World's Directory, which will give him full information on this subject.

Twist in Yarn for Mercerizing.

Editor Textile World:

What twist should be put in yarn intended for mercerizing in order to secure the best results?

Mercerized Twist (218).

The softer the yarn, the better lustre is obtained in mercerizing. This is because the liquor penetrates soft twisted much easier than hard twisted yarn. Of course there must be sufficient twist to enable the yarn to stand the subsequent processes of manufacturing and to get the desired effect in the goods. In the leading New England mill where cotton yarn for mercerizing is manufactured, the twist is calculated in single yarn by multiplying the square root of the yarn number by 3 or 3 1/4, according to quality. For weaving 2-ply yarn, the twist is calculated in the same mill by multiplying the square root by 2 3/4.

In another New England mill, 18 96/100 turns are put in single 40s intended for mercerizing, and 12 29/100 turns are put into 2-ply 40s. As the yarn gets finer more twist is inserted. The twist for single 80s is calculated by multiplying the square root of the yarn by 3 1/2.

Bleaching Raw Cotton and Cotton Waste.

Editor Textile World:

What is the best method of bleaching raw cotton and cotton waste? How much does it cost to do this work and what is the cost of a bleaching plant with a capacity of 500 to 1000 lbs. per day? Verein (217).

We refer our correspondent to an article in another part of this issue in which his question is answered.

Ringwood Gloves.

Editor Textile World:

I notice in the review of the Chemnitz market in the February issue the term "Ringwood" used. I would like to know what it means.

Mercer (222).

"Ringwood" is a term applied to a style of gloves. The origin of the word is in doubt, but it was first used in England, and applied to fancy knit wool gloves in colored patterns. Recently, however, it has been given a more general meaning, and applied to all classes of knit gloves, such as are known in the domestic market as golf gloves.

New Publications.

Practical Cotton Calculations; by Ernest Whitworth. Price $1.00.

This work will be welcomed by the workers in our mills as an addition to those handbooks, unfortunately too small in number, that combine a large amount of practical information presented in concise and clear language with a convenient size and moderate price. The author is a practical weaver and designer who has sought in this work to give mill men the information that is needed in every-day work, and to carefully exclude all matter that is not essential to this main object. The work is illustrated and contains many useful reference tables.

The following abstract of the table of contents will give an idea of the ground covered:—Glossary of Technical Terms; Length of Weight Tables; Testing Size of Yarn; Reeling Yarn; The Various Systems of Numbering Yarn; To Find Counts, Length or Weight of Cotton Yarn; Beam Yarn and Yarn Calculations; Warp and Filling Calculations; Average Count of Yarn in Cloth; Average Count of Cloth; Calculations of Checked Pegged Patterns; Contraction and Reed Calculations; Contraction in Length from Warp to Cloth; Weight of Cloth and Yards per Pound; Percentage of Warp or Filling; Twists per Inch; Diameter of Yarn; Testing Strength of Yarn; Cloth Production; Speed Calculations; Cost, Calculations for Yarn and Cloth; Blanks for Mill Use. Orders for this work can be sent to this office.

Protection. The Views of a Manufacturer; by G. Byng; Eyre & Spottiswoode, London, England; price $1.25.

This book has been written by a British manufacturer who is alarmed at the inroads that have been made into the trade of free trade England by countries that have surrounded themselves with high tariff walls. He states in the preface: "I am a manufacturer. My case is that of every producer in this country. My capital and business are imperiled, the living of the thousands of workmen I now employ is at stake; if the safeguards for which I plead are denied me, I shall be compelled to cease to be a producer."

The key note of the book is found in the following paragraph that appears in the first chapter: "I venture to prophesy that by about 1912 there will be no history of English free trade to record. There will be either no trade, or there will be protection." The book will repay reading, as it is evidently written by a man who believes what he says, and who has made up his mind to say what he believes. Time will tell whether he is a false prophet or is gifted with a foresight much keener than the vast majority of his countrymen.

Causes of Fire in Cotton and Cotton Spinning Mills; by Nikolaus Kraefft; Price $1.00.

This work treats of the various divisions of the subject in the following order: Spontaneous Combustion; Combustion from Sun's Rays; Lightning; Lighting; Heating; Sparks; Explosion; Friction; Foreign Substances in the Stock; Methods of Prevention. The work is in German and can be ordered through this office.

The Theory of Prosperity, by Simon N. Patten, Ph. D.; The MacMillan Co., New York.

The author of this book treats of that great problem vaguely defined as the "social question,"—of the phenomena of earning bread by the sweat of one's brow, and of getting possession of bread earned by the sweat of some one's else brow. The following is an abstract of the table of contents: Work and Pay; Monopoly Advantage; Investments; Income as Fixed by Struggle; Income as Increased by Adjustment; Income as Modified by Economic Rights.

German Calendar for Dyers, 1902; Georg D. W. Callwey, Muenchen, Germany; price $1.25. This is a booklet of pocket size containing a diary and much useful information in regard to dyeing and finishing. The text is in German, and many of the articles are illustrated. It can be ordered through this office.

Progress in Chemical Technology of Textile Fibres; by Henry Silbermann; Gerhard Kuehtmann, Dresden; 540 pages; illustrated; price $12.00.

This is the first of a series of volumes treating of the progress and improvements made in chemical processes of the textile industry, together with the necessary mechanical appliances, as disclosed by the official records of the German patent office. The series is entitled, Progress in the Domain of the Chemical Technology of Textile Fibres. This first volume treats of the machines and is to be followed during the current year by the second volume, treating of the chemical processes of textile manufacturing. The work is divided into separate sections for

the different branches, such as preparatory processes, bleaching, dyeing, printing and finishing, and covers the period from 1885 to 1900. Care has been taken to exclude patents that do not embody an actual improvement; this makes the work much more valuable than the ordinary list of patents. Systematic indices enable the reader to refer to any particular class of machinery or to any patent number in the book. Each machine is illustrated by drawings.

This series cannot fail to be of great value to inventors and builders of machinery for handling textiles in the preparatory, dyeing, bleaching or finishing processes or where the fibres are subjected to chemical treatment. The work is in German and can be imported through this office.

Reeling Silver, Roving and Yarn; by Nikolaus Kraefft; price $2.00.

This handbook gives numerous methods of determining the weight or size of the various strands of textile fibres. The subject is treated thoroughly. The many rules contained in the work are supplemented by valuable yarn tables. The text is in German. Orders can be sent to this office.

Zeitscrift fuer Farben und Textil Chemie; A. Buntrock, Editor; F. Vieweg & Son, Brunswick.

This is a new German journal of dyeing and textile chemistry, to be issued every two weeks. It is intended to be of a more scientific character than the dyeing journals now published. The first number is very attractive both in make-up and material. We wish the new comer success.

Spontaneous Combustion, by Dr. L. Haepke; C. Ed. Mueller, Bremen; price $1.00.

This work treats of the subject as related to ships' stores, cotton and other textile materials, coal, hay, tobacco, etc. Many of the chapters are by experts in this line. The book is written in German and can be ordered through this office.

The Chemical Trade Review; Edward Prag, Editor and Manager, 311½ Walnut St., Philadelphia, Pa.

We have received a copy of the first issue of this publication, to be published monthly, and devoted to the chemical industry. The first number presents a business-like appearance, and we trust the new journal will prove profitable to both reader and publisher.

The Technic of Bobbin Lace, by C. Jamnig and A. Richter; Spielhagen and Schurich, Wien. $6.00.

This work consists of 41 plates showing different varieties of bobbin lace in various stages of development. It is intended for use in schools. A brief description of the various patterns and varieties of lace is given in German. The main object of the work, however, is to convey information by illustrations of the lace itself. Orders can be sent to this office.

Business Literature.

Points on the Art of Finishing; Birch Bros., Somerville, Mass.

This is a useful book containing a technical article on finishing, also illustrations and description of the many and well known finishing machines built by this firm.

A Textile "At Home," Harding, Whitman & Co., Boston.

This book contains a large number of half-tone engravings from photographs taken at the New York and Boston offices of the firm and at the Arlington and Whitman mills. The engravings are of liberal size and well executed. The subjects are well selected and a concise description accompanies each one. The views are arranged systematically, beginning with the early processes and an excellent idea of textile mills and manufacturing as well as the enterprise of this firm, is given. Opening its pages seems like entering the doors of their mills and offices.

Blowers and Exhausters. The Hartford Blower Company, Hartford, Conn.

We have received Catalogue No. 51, describing the Hartford Blower Company's adjustable, interchangeable, reversible exhausters, and their regular line of blowers and exhausters. A copy will be mailed to anyone upon application to the Hartford office.

A. B. C. Steel Plate Fans. The American Blower Company, Detroit, Mich.

Catalogue No. 134 recently issued contains an illustrated description with price-lists and dimensions of the various types of fans built by this well-known firm. Valuable tables relating not only directly to fans and blowers, but also to subjects of general interest, are added.

Speed Regulation of Water Wheels. The Sturgess Governor Engineering Company, West Troy, N. Y.

In this catalogue are described the various water wheel regulators built by this firm. In addition, the book contains much valuable information on the general subject of water power and water wheel regulators. It should be in the hands of every user of water power.

Birch Bros., Somerville, Mass., have gotten out a very attractive calendar for 1902. It is a steel engraving of a pretty river scene. It will be a reminder throughout the year of the excellence of the machinery which Birch Bros. handle. Their line covers a wide range of bleaching, dyeing and finishing machinery for cotton mills and finishing, washing, tentering, dyeing and sewing machinery for woolen and worsted goods.

New Color Cards.

—Cassella Color Co., New York. Diamine Fast Blue C. This card shows 12 samples of cotton yarn, loose cotton and cloth dyed with Diamine Fast Blue C. It is adapted for dyeing union goods, as well as cotton fabrics.

—Cassella Color Co., New York. Diamine Heliotrope G O and B. This card shows 23 samples of cotton yarn, loose cotton and cotton cloth dyed with Diamine Heliotrope G O and B in various shades. Full directions and formulas are given.

—Farbenfabriken of Elberfeld Co., 40 Stone Street, New York. Fashionable shades on worsted yarn. This card shows 48 shades on worsted yarn dyed with alizarine colors. Formulas and full directions for dyeing accompany the samples.

—Berlin Aniline Works, 72 Front Street, New York. Columbia Black 3 B and 4 B. This sheet shows four samples, two of cotton yarn and two of cotton cloth, dyed with Columbia Black 3 B and 4 B.

—Cassella Color Company, New York. Cotton Wool Mixtures. This card shows thirty-two attractively arranged cloth samples of cotton and wool mixtures dyed with the acid colors and topped with diamine colors. Full directions and formulas accompany the same.

Attention is called to the handsome styles of shade cards in puff effects, originated by Henry Rosenberg, 107 Greene Street, New York. This way of showing samples is especially adapted for Satin Liberties, Satin Taffetas and other sheer fabrics to show the lustre. Ribbon, Velvet, Velveteen and Corduroy shade cards, as well as color cards for dyestuffs, are among the special features of this establishment.

National Association of Cotton and Wool Waste and Shoddy Dealers.

A meeting of cotton, wool waste and shoddy manufacturers, called by John J. Ryan, of the United Wool Waste Co., Troy, N. Y., met at the Gilsey House, New York City, February 12th, for the purpose of organizing a Shoddy and Wool Waste Association. About twenty-five responded to the call, including representatives of the press. The meeting was called to order by Mr. Ryan, who briefly outlined the purposes of the Association. Afterwards a code of By-Laws was drawn up, which we print below, and were signed by the following charter members: Chas. W. Becker, Amsterdam, N. Y.; Wm. B. Charles, Amsterdam, N. Y.; Wm. Lowenthal, Cohoes, N. Y.; Walker & Harp Mfg. Co., Cohoes, N. Y.; S. Rawsitzer & Co., New York City; John W. Ryan & Co., New York City; Wm. Soules, New York City; The Basch & Greenfield Co., Newark, N. J.; B. M. Rockwood, Franklin, Mass.; Wm. Barnet, Albany, N. Y.; Chas. L. Blanding, Providence, R. I.; The Chas. F. Pierce Co., Providence, R. I.; Herman Bonitz Co., Lodi, N. J.; Wm. C. Johnston, Philadelphia, Pa.; Stoughton Mills, Stoughton, Mass.; G. C. Mercer, for Garfield W. Mills, Garfield, N. J.; Frank B. Graves, Albany, N. Y.; John J. Ryan, Troy, N. Y.; Seltzer Woolen Co., Cleveland, O.; Wm. Hughes, Brooklyn, N. Y.; John J. Murphy, Troy, N. Y.

It was voted that the Association should be known as the National Association of Cotton and Wool Waste and Shoddy Dealers, and the following officers were elected: President, John J. Ryan, Troy, N. Y.; vice-president, Herman Rawsitzer, New York City; secretary, Frank B. Graves, Albany, N. Y.; treasurer, Charles Basch, Newark, N. J.

The manufacturers who were present at the meeting all seemed enthusiastic at the prospects of the Association. After the meeting adjourned, a banquet was served to the members of the Association and invited guests, which was thoroughly enjoyed.

A number of letters were read by President Ryan, from manufacturers who were unable to be present, but who stated they were heartily in sympathy with the organization, and desired to become members. Following is an abstract of the by-laws of the Association:

CONSTITUTION AND BY-LAWS OF THE NATIONAL ASSOCIATION OF COTTON AND WOOL WASTE AND SHODDY DEALERS.

Article I—Name—This Association shall be known as the National Association of Cotton and Wool Waste and Shoddy Dealers.

Article II—The objects of this Association shall be to cultivate and preserve a better acquaintance between its members, to promote their general welfare, to provide effective means for the prevention of abuses in their field of business, and generally by discussion of subjects of importance to the waste and shoddy business to elevate the trade and open up to the members of the Association a wider field of business activity.

Article III—Membership—Any waste or shoddy dealer in the United States of America may become a member of this Association, but all, except charter members, must be elected members at a meeting of the Association.

Article IV—Dues—The annual dues of the Association shall be $10.00, payable in advance on the 15th day of January of each year.

Article V—Officers—The officers of this Association shall consist of a president, vice-president, secretary and treasurer, who shall be elected at the annual meeting of the Association.

Boiler Explosion in a Spanish Mill.

A boiler exploded last month at a spinning factory at Puente de Vilumara, in Spain, and the whole building collapsed as a result. Many of the operatives were buried in the ruins, and it is reported that about 60 were killed and 100 injured.

Recording Breaking Trip on the New Jersey Central.

No little comment is being made on the fast run of the J. Pierpont Morgan Special from Philadelphia to New York on February 7th over the New Jersey Central.

The train of two cars was drawn by Phila. & Reading engine No. 316, with M. Loughrey as engineer and J. Kurfuss as conductor.

The distance between the Reading terminal in the Quaker City and Jersey City is 90.2 miles and the time of the train between the two points was 84.5 minutes. That many a mile was reeled off at a record breaking clip can be seen from the lowing table.

	Distance Between Stations.	Distance From Phila.	Time A. M.
Reading Term. Phila.	..	...	10.01
Tabor Junc.	..	7.1	10.11
Jenkintown	3.8	10.9	10.17
N. Y. Br. Cross	..	...	10.20
Somerton	7.4	18.3	10.23
Janney	3.5	21.3	10.25
Woodbourne	4.7	26.5	10.29
Yardley	4.3	30.6	10.33
Trenton Junc.	2.1	32.9	10.34¼
Ewing	1.0	33.9	10.36½
Glenmore	6.3	40.2	10.40
Skillman	5.7	45.9	10.45
Hamilton	7.6	53.5	10.51
Weston	2.7	56.2	10.53
Pt. Reading Junc.	1.2	57.4	10.54
Bound Brook	2.6	60.0	10.56¼
Dunellen	4.3	64.3	11.01
Plainfield	2.9	67.2	11.04
Westfield	4.5	71.7	11.07
Roselle	4.4	76.1	11.10
Elizabeth	2.6	78.7	11.13
Elizabethport	1.9	80.6	11.14¼
West 8th St.	2.9	83.5	11.18
Claremont	4.7	88.2	11.23
Jersey City	2.0	90.2	11.25½

Castings for Mill Machinery.

Homer F. Livermore, 89 Pearl St., Boston, Mass., is prepared to furnish promptly steel, malleable, grey iron, bronze, brass and aluminum castings of superior quality. He asks mill managers to give his castings an opportunity to speak for themselves, as he is confident a trial will result in their continued use. The cost of castings is not covered by the price paid at the start. Every mill man has experienced the effects of a casting breaking on an important machine when the production of that particular machine was needed the most, causing loss of production throughout the whole mill. The best castings are not only the cheapest as far as the direct cost is concerned, but prevent the serious losses resulting from breakdowns.

Fireproof Insulators.

Architects and builders are confronted more than ever with the problem of rendering dwellings safer as regards fire. The public are satisfied satisfactory results are obtainable without the cost being prohibitive. As dwellings cannot yet be built cheap enough entirely out of stone, it becomes necessary to protect the wooden portions sufficiently that fire, when started, does not become too destructive. Fire spreads rapidly, if it finds openings to act as flues, such as empty partitions, narrow, long hallways, elevators, shafts, etc. Hallways and elevators are still open problems, on account of presenting a long opening which readily become chimneys.

By using fireproof plasterboards a partial remedy is secured. The partitions and outside walls are still left often vacant without occasional fire-stops cut in between the joists, although they should be completely filled in with either brick, plaster, mineral wool, etc.

Beside improving the fire risk, it makes the walls, partitions, etc., a poorer transmitter of heat, cold or sound, thereby insuring more comfort to the occupants at a trifling increased cost. Fuller information and particulars will be given upon application to the U. S. Mineral Wool Co., of 143 Liberty St., New York City.

A Liquid Pulley Cover.

The Warren Company, N. Franklin St., Chicago, report that they are receiving very gratifying re-orders for their liquid pulley cover from representative houses in all branches of industry. The following well known textile manufacturers are among others who have re-ordered recently:

Lane Mills, New Orleans; Otis Co., Ware, Mass.; Dwight Mfg. Co., Alabama City, Ala.; Enoree Mfg. Co., Enoree, S. C.; and High-Rock Knitting Co., Philmont, N. Y. Warren's pulley cover is especially adapted for use in Textile Mills, as it is easily and quickly applied and overcomes belt slipping without loss by friction. It is not sticky, hence does not attract dust to belt or pulley. The Warren Company solicit correspondence regarding this pulley cover and guarantee satisfaction to all who give it a trial.

The Richard H. Hill Company.

Richard H. Hill, who for the past eight years has acted as general sales agent of power transmission machinery for The James Hunter Machine Co., and as consulting engineer and manager of their Boston office has formed a company styled the Richard H. Hill Co., who will carry on a mill engineering business, furnishing engineering plans and complete equipments for mills, including water wheels, engines, boilers, generators, motors, pumps, structural work, gearing, belting, etc.

Mr. Hill will continue to act as agent for the James Hunter Machine Co. The many requests for work in the engineering line have made it desirable for him to organize this business separately. The headquarters of the new firm will be at 70 Kilby St., Boston, in the same rooms with the James Hunter Machine Co.

A Good Thing Grows!

The A. J. Beckley Co., 284 Pearl St., New York City, factory at Garwood, N. J., have made extensive additions to their already large plant and are now in a position to furnish promptly and at lowest prices, anything in the line of perforated sheet metals. They carry in stock perforated brass and tin, with standard perforations at all times. Their central location enables their customers to receive their goods promptly. Write them for prices.

A Dust Removing System.

The Hartford (Ct.) Blower Co.'s system of dust removal has been adopted by the Pratt and Whitney Co., Hartford, Conn. The order is for a complete system for removing the shavings, sawdust, chips, etc., from the machinery in their woodworking department. This complete system consists of the exhaustor, dust-collector, piping and hoods, to-

gether with all special fittings, etc. The refuse is removed from each machine, and conveyed to a dust collector placed on the roof, from where it is deposited into a dust receptacle. From this receptacle a pipe leads to the first floor, where it can be loaded into a wagon and taken away.

The order was given after competition with a number of blower concerns. The Pratt & Whitney Co. are known all over the world and purchase goods which are only of superior quality and workmanship.

Three Years' Trial of Cling-Surface.

The following letter gives an idea of the wide possibilities claimed for Cling-Surface:

THE HIND & HARRISON PLUSH CO.
Clark Mills, New York.

Mr. Chas. F. Chase, Mgr. New York Branch.

Dear Sir,—Our experience with Cling-Surface has been gratifying.

We have used this article for upwards of three years and have found it to give good results on leather, rubber and cotton belts; we have also used it on the small rope drive with equally good results.

We consider your Cling-Surface to be the best material for belts of which we have any knowledge.

Yours truly,
The Hind & Harrison Plush Co.

Stands Supreme.

That noted foreign resort, Brighton, is not one whit more beautiful than Lakewood, New Jersey's Famous Winter Resort. Lakewood's Clientele is the most fashionable and select, and its attractiveness is unsurpassed. For diversion there is driving, golfing, walking, polo, cycling and the like, while the more social pastimes have many devotees. Lakewood's Hotels are marvels of comfort, convenience and hospitality, and one interested in unique resorts should have the New Jersey Central's Lakewood Booklet, just out, and replete in authentic information. Send for it to C. M. Burt, G. P. A., 143 Liberty Street, New York City. It is free for the asking.

Enamel Guides.

In enameling, as in everything else, care and experience counts, and poor work is worse than none at all. L. M. Hartshorn & Co., North Windham, Conn., manufacture enamel guides, for which they claim great superiority over the cheap goods that manufacturers have found so unsatisfactory. They do not claim to sell low priced goods or offer any discount from their regular price list, but seek to give the manufacturer value received by reason of the superior quality. They invite correspondence and a trial order, feeling confident that a comparison of their smooth and durable enamel with competing makes will be the best testimonial that can be given.

The Geo. W. Stafford Company.

ANNOUNCEMENT:

This Company is organized to manufacture weaving machinery, etc., of the type with which Mr. Stafford has so long been identified and will also manufacture under license from The American Loom Company, the Harriman Automatic Looms and appliances. It has acquired the plant of the above mentioned company with its entire equipment, which is second to none in this country, and it will be the endeavor of the new Company to produce a high grade class of machinery relating to weaving, including plain, automatic, jacquard, and silk looms, dobbies and warp stop motions. Information upon any detail relating to the foregoing will be promptly furnished.

The Geo. W. Stafford Co.
Geo. W. Stafford,
Pres't and Gen'l Mgr.
Readville, Mass.

Steel Thread Boards.

Several mill superintendents have recently written to Mr. L. T. Houghton, Worcester, Mass., the sole manufacturer of the Houghton steel thread board for spinning and twisting frames, that they do not see how any mill can afford to use wood thread boards after once having tested the steel boards. The Fall River Machine Co. are now fitting their frames with the steel thread board, and Mr. Houghton is now filling orders for them, and reports the prospect of business is very good.

Raw Stock Dyeing Machine for Sulphur Colors.

The Delahunty Dyeing Machine Co. of Pittston, Pa., are using at present an all metal cylinder in their dyeing machine for coloring sulphur colors in raw stock, and have lately placed a number of these machines in the following mills: Hamilton Mills, Lowell, Mass.; Appleton Mills, Lowell, Mass.; Swift's Cotton Mill, Elberton, Ga.; Fort Mill Mfg. Co., Fort Mill, S. C.; Kincaid Mfg. Co., Griffin, Ga., and others. These sulphur coloring machines can also be used for bleaching raw cotton.

This firm has also installed a number of their hosiery-dyeing machines in the following mills: Fay Stocking Co., Elyria, O.; Shaw Stocking Co., Lowell, Mass.; Tiffany Bros., Bennington, Vt., and others.

Have Their Own Southern Office.

The Mason Machine Works make the following announcement to the trade:

Taunton, Mass., Feb. 20, 1902.

Dear Sirs,—Recognizing the continued increase in cotton manufacturing in our Southern States, and the importance of dealing direct with our customers, we are pleased to announce that on or about March first next, we shall open our own office in Charlotte, N. C., for the sale of our cotton machinery, viz., revolving flat cards, railway heads, drawing frames, lap machines for combers, combing ma-

chines, self-acting mules, ring spinning frames, and looms in large variety.

By mutual consent, the business relations which have existed between ourselves and the D. A. Tompkins Company of Charlotte, our Southern agents, will terminate on March first.

Our new office in Charlotte will be directed from our Taunton office, and personal applications or inquiries by letter will receive prompt and courteous consideration. Prospective purchasers of cotton machinery will feel that, by our new arrangement, they are dealing direct with us, with the same result as would be obtained by a visit to our shop. Our line of machinery will be found to be modern in all respects, and built with a view to keep the name "Mason" in the high place it has so long held.

We thank our many customers for their patronage, and solicit a continuation of their business.

Very truly yours,
Mason Machine Works.

Note:—We request that communications for our Southern Office be addressed "Mason Machine Works, Charlotte, N. C."

The Bamford Spindle Tube.

It is now several years since the Bamford dust proof and self-lubricating spindle tube for worsted spinning has been put on the market, and it is interesting to note that of the thousands that have been put out, many of them at first on approval, not one single tube has been sent back, nor any fault found by any manufacturer using them. Those ordering new worsted spinning machinery are in the majority of cases specifying this tube. Our readers are doubtless familiar, through the illustration in the advertisement, with its form of construction, which prevents clogging of dust and lint, saves oil and insures longer life to the tube. It enables uniform speed to be maintained, and the general result of these various advantages means more perfect yarn. To such manufacturers as are not using this tube, Messrs. Bamford & Smith, Pascoag, R. I., offer to send a sample and invite correspondence.

They are also manufacturers of steel caps and spindles, and do general repairing in this line of work.

Dyeing Machinery and Appliances.

Mr. Frank Bailey, Cedar Brook, N. J., manufacturer of dyehouse appliances, dry and sulphur house poles and dye sticks, has put up an addition of 40 by 26 feet to his building to accommodate his rapidly increasing business. This now gives him a building 70 by 26 feet, two stories and a half high, equipped with improved machines, such as new planers, lathes and jointers, for getting out cedar dye sticks for dyeing machines.

The new stick he placed on the market a year ago has proved to be one of the best on the market; he has sold thousands of them that have given the best satisfaction, and effected a saving of from 40 to 50 per cent. Among the mills in Philadelphia who are now using them may be mentioned the following: Hulton Dyeing & Finishing Co., J. R. Foster & Sons and the Shackamaxon Worsted Co.

In New England, he has equipped the following plants: Westerly Woolen Co., Westerly, R. I.; Earncliffe Worsted Mills, Providence, R. I.; James D. Minto, Manton, R. I., and many others, and all say that these sticks are the best they have ever used.

The work of getting out and preparing these sticks is all done under the personal supervision of Mr. Bailey, and nothing goes out of his factory that is not finished in the best possible manner suitable for the yarn trade. Mr. Bailey is a practical man, and has worked in yarn mills for years, and thoroughly understands how goods should be finished. Those who have not tried his goods should consult him as to prices, etc.

He has recently placed on the market a drying machine for drying skein yarns by the cold air system, no heat required; it is especially adapted for fine yarns. All manufacturers who have used hot dryers know the injury to the fibre caused by the heat. In a later edition this machine will be illustrated, and its many good points further described.

Morehead Return Traps.

The American Blower Co., Detroit, Mich., have issued a folder giving much valuable information regarding return traps in general, the Morehead trap built by them in particular. The dimensions, capacity and price-list, as well as illustrations of the trap are also given.

A Large Fan.

The Buffalo Forge Company of Buffalo, N. Y., are building a large and interesting fan to be used for mine ventilation by the Modoc Coal Mining Company of Glousier, Ohio. This fan is an immense one with a 250-inch housing of the three-quarter type, and in constructed throughout of steel plate rigidly stiffened and braced.

The blast wheel or rotating element of the fan is of special design. It is to be driven by a direct connected horizontal engine at a speed in the neighborhood of 150 revolutions per minute. The fan will deliver 125,000 cubic feet of air per minute at ordinary working speed. This is one of many typical mine ventilating plants which are constantly being built and installed by this company.

Scouring Wool.

In scouring wool it is essential that it be freed from grease and other impurities, while at the same time the fibres remain uninjured. It is very easy to scour wool clean, but the difficulty in this process consists in getting the wool clean and at the same time not injuring the natural spinning quality of the fibre. Another important point, especially where wool is scoured for sale, is to bring the stock out white without danger of its becoming yellow in storage.

The J. B. Ford Company, Wyandotte, Mich., have given this subject of wool scouring careful attention, and made a scouring compound that they offer to the trade under the name of Wyandotte washing soda. They claim that wool can be scoured with this compound at a

greatly reduced cost, as compared with the ordinary methods employed for this work, and that the wool comes out soft, white, and with the fibre uninjured. They are so confident as to the merits of the material that they offer to furnish either direct or through dealers a trial lot of from one to five barrels of the soda, with the understanding that, if not satisfactory, the unused portion can be returned at their expense and that no charge will be made for the part consumed.

Technical Education in Textile Industry.

A gentleman prominently identified with the textile industry, said recently:

"The textile manufacturers of the country are lacking in but one essential need, and that is the supply of skilled labor. If our mills are to compete with those of the world, and such is certainly to be the case, they must have a class of help with that knowledge of the finer points of textile manufacturing that can be obtained in but one way, namely: textile education."

How to get such an education is a problem that confronts young men who are ambitious to rise to better positions. There are several excellent resident textile schools but the number of young men who can give up their work in order to attend them, is limited. Through its course in textile engineering, the American School of Correspondence, Boston, Mass., affords an opportunity to textile workers to secure an education in the various branches of the textile industry without interrupting their work and at very slight expense. In fact, the school offers a few free scholarships in which the only expense is the actual cost of instruction papers and postage.

Opportunities Across the Rio Grande.

Mexico offers one of the largest and best fields of operation for American enterprises. Many Americans have no conception of the prosperity and progress of that Republic, nor of its trade possibilities. Mexico possesses an area of 767,316 square miles, and has a population of over twelve and one-half millions. Its imports are constantly increasing, and the United States now enjoys the advantage of three-fourths of this trade. We should be able to take away from England and Germany much of that they now have, by reason of our proximity and the many railroad and steamship lines connecting us with the Republic.

The writer knows that Mexico is a good field for the American advertiser. The country is rapidly progressing in all directions, and the business men appear to be willing to take hold of American goods and push them on condition that suitable advertising is done.

Its leading cities are Mexico City, 339,935; Guadalajara, 101,208; Puebla, 98,191; Leon, 63,263; Monterey, 62,266; San Luis Potosi, 60,858; Guanajuato, 40,580; Morelia, 38,606; Queretaro, 38,016; Aguas Callentes, 37,816; Pachuca, 37,487; Zacatecas, 34,438; Orizaba, 33,539; Vera Cruz, 29,162; Toluca, 25,940; Celaya, 25,565; Saltillo, 23,996; Irapuato, 19,640; Tampico, 16,313; Silao, 15,463.

These twenty cities practically cover the whole Republic, and it is plainly seen how easily and with how comparatively small an appropriation it can be covered.

The writer believes that more progressive advertisers would find it profitable to expend from $5000 to $15,000 for a year's advertising campaign in Mexico.

There are several good dailies in the above-mentioned cities, a few being printed in English, but more of them in the Spanish language, which is better suited to the majority of the population. These vary in circulation from 2000 to 50,000, and are good advertising mediums.

Of course, the chief obstacle in the way of sending manufactures to Mexico is the duty levied on many articles. This can, however, be overcome in the average case.

The United States ought naturally to be the source of supply for Mexico. All that is necessary is for the exporters to make a determined effort to secure this trade.

EMMONS BALL.

Notes From Western Mills.

At Beaver Dam, Wis., I found the worsted mills in the hands of a receiver, but still running, trying to fill their orders; there is a movement on foot now to get the business of the concern adjusted in such a way that the plant can be run as of old.

The Beaver Dam Woolen Mills are busy and are having a nice business. Mr. McFetridge told the writer that they had nothing to complain of except that they could not get goods out fast enough to fill their orders. The Portage Hosiery Co., at Portage, Wis., are running all their machinery full time, and enjoying a good business. I found the Island Woolen Company, at Baraboo, Wis., very busy and trying to get every yard they could from their looms. This company have a nice business on meltons and make a great many of them; the production is a credit to Mr. Morey, the superintendent.

At Reedsburg, I found a change. Mr. Dredge, the former superintendent, had resigned to accept a similar position with Meek Bros., Bonaparte, Iowa; hence I found Mr. French back in his old position as superintendent with the Reedsburg people, and it seemed quite natural to see him at his old post. This firm are running everything full, and have all the business they can take care of.

The La Crosse Knitting Works, La Crosse, Wis., are one of the busy concerns of this part of the country, and everything bears the appearance of prosperity around and about their plant. Mr. Robbins is the manager and buyer, and is without doubt, the right man in the right place. At Rushford, Minn., J. Webster & Co., have a nice business on hosiery yarns and have all they can do in their line.

The Rochester Woolen Mfg. Co., Rochester, Minn., make their entire product into pantaloons; they run three sets of machinery on cassimeres and cut every yard into men's garments. Their cutting department is in the city nearly a mile from the mill, and is certainly a model of its kind. H. K. Terry is general manager, and he has everything moving in good shape.

The Prairie du Chien Woolen Mill Company, at Prairie du Chien, Wis., Mr. R. D. Paris, president and superintendent,

are very busy as usual; this is a 3-set mill and the entire plant is running in full; here also, they make up part of their production into men's garments; they also make a line of meltons for the market; go when you will to these mills, you will always find them busy.

At Hanover, Illinois, I found the Hanover Woolen Mfg. Co., running 8 hours per day. This mill is one of the very best concerns in the West and produces a high grade product, and has a good reputation for fine goods for both men's and ladies' wear. It is expected that the plant will start on full time, 10 hours per day, in the near future.

The next place I visited was the Davenport Woolen Mills, Davenport, Iowa; I found them running full time; the superintendent, J. J. Dalton, told me they had plenty to do and were not hunting for orders at present. These people, like all others I called on, think that 1902 is going to be a good year for business.

At Des Moines, Iowa, I found the Capital City Woolen Mills very busy; this firm make their entire production into garments for both men's and women's wear, and have a large business on ladies' skirts, making them up in the latest styles; the writer was informed that this company buys large quantities of goods outside of their own product for use in the manufacture of skirts.

F.

At La Porte, Ind., I found both mills very busy, running until 9 o'clock at night. Mr. Riley is the new superintendent at the La Porte Woolen Mills, and Mr. Ayres, superintendent at the King & Fildes Company's mill. Mr. John Fildes, of the King & Fildes Co., is to take a year's vacation on account of his health, and goes to New Mexico for several months as soon as the weather settles.

Samuel Fox's Sons, the La Porte Woolen Mills, have built an addition to their mill, and have added 2 60 in. set of cards and other machinery since the writer called on them last. They can now boast of having one of the most complete 5-set mills in the West. Fox Bros. deserve the success they have attained.

At Kenosha, Wis., the Chicago Rockford Hosiery Company are also very busy on their line and are doing all in their power to take care of their large business. Mr. W. W. Cooper is the manager and buyer for this company. At Milwaukee, Wis., I found the Kalamazoo Knitting Co. adjusting the loss they had by a fire that occurred recently and damaged their card room to the extent of over $2000. At Sheboygan, the knitting mills are well employed, and have all the orders they can take care of. Edward Ward is superintendent of this plant, and has got his work in good shape.

At Sheboygan Falls, the Brickner Woolen Mills Co. are running full, ten hours per day, and all the overtime the employees can stand; they are running two of their 6 sets on a fine line of ladies' dress goods, and are still on light weights with their other 4 sets; the manager said to the writer that they did not think that they would be able to complete all their orders on light weights that they have booked, but were doing all in their power to this end.

At Appleton, Wis., the Appleton Woolen Mills have all they can take care of and are running full time every day. This company makes felt, and have a very extensive trade in this line. Frank Phillips, the superintendent, told the writer that they were now about to start their cassimere department, and are figuring on converting the output of cassimeres into trousers, and perhaps later into men's suits complete. Right here the writer wishes to add that the men's wear business is coming to one thing or the other, viz., either the wholesale clothing manufacturer will have to put in machinery to make his own cloth, or the manufacturer will have to put in the necessary machinery to convert his product into garments. One thing or the other is the coming proposition, especially with the Western manufacturer. The unjust claims made on the manufacturer for imaginary imperfections, etc., made for the sole purpose of covering the expense of freight and cartage rates, and last, but not least, the well paid pet examiner's fees, these things coupled with the abominable curse of cancellation are enough to make the average manufacturer scratch his head and look around for another proposition.

F.

—O. W. Russell has severed his connection as editor of Power and Transmission and advertising manager of the Dodge Manufacturing Company, Mishawaka, Ind., having formed a conection with the Pittsburg Gage & Supply Co., Pittsburg, Pa., in charge of advertising.

—The Cornwall & York Cotton Mills Co., St. John, N. B., have placed their order with H. G. McKerrow, 31 State Street, Boston, for Taylor, Lang & Co.'s mules. H. G. McKerrow is the American agent for this well known make of mule. The Weetamoe Mills, Fall River, have placed a large order with Mr. McKerrow for slubbing, intermediate and roving frames of Tweedales & Smalley's make.

—The Green Fuel Economizer Co., Matteawan, N. Y., are placing their economizers in the Oakland Worsted Company's mill. Oakland, R. I., and in the Geneva Mill, Providence, R. I. The Wanskuck Company, Providence, R. I., have used the Green Economizers since 1874.

—It was not so long ago that the export of American made carpets to Great Britain and the continent was heralded as a remarkable thing. That American carpets are now systematically sold in Europe and well known there is evidenced by an item appearing in an English journal to the effect that Mr. Wm. W. Primrose, long connected with the carpet trade in Great Britain, is now visiting that country in the interest of Messrs. John & James Dobson of Philadelphia, having been appointed their sole agent in Europe. The English journal goes on to say that the name of this well known firm is as a household word, and the high class quality of their goods is widely known and appreciated in the trade, and after appointing agents throughout the country, Mr. Primrose returns to the United States.

IN AND OUT OF THE MILL.

Richard Arkwright—A Story of Persistent Endeavor, Crowned by Success.

The story of Richard Arkwright furnishes an example of wonderful and inexhaustible energy and perseverance under greatest difficulties. Arkwright was born in England in 1732, and born poor:—so poor, in fact, that he never had a day's schooling—for schooling in those days meant the expenditure of money. He was one of thirteen children, and grew up anyhow, with the most meagre opportunities.

He was early apprenticed to a barber, and one is led to wonder if this ignorant boy who was later destined to revolutionize the art of cotton spinning, had any realization of the latent powers of invention within him. If he did, he never let loftier notions interfere with the business of the present, for he made a good barber, and after a while set up for himself. He showed an aptitude for the practical affairs of life by working up a trade in spite of the opposition of better equipped shops. His sign was as catchy as some of those of the present day, when advertisement writing has become an art. "Come to the Subterraneous Barber. He Shaves for a Penny," was the legend outside his little basement shop; the sign and his good work brought him customers, so that later he was able to move into better quarters.

But Arkwright was a restless man, not content to plod along letting well enough alone. An impelling desire to see something of the world possessed him, and he gave up his shop and took up the business of an itinerant hair dealer, selling also dressings and dyes. In those days wigs were the vogue, and Arkwright made becoming ones which tickled the vanity of his customers. Therefore he flourished.

His purchases of hair were made largely at the hiring fairs in Lancashire. Hither the buxom English lassies flocked to hire out to domestic service. Arkwright had a taking way with the women, it is said, and was successful in inducing many a maid to part with her long tresses at a figure which allowed him a liberal profit.

And all the while that Arkwright wove his head-dresses and mixed his dyes, he was working out in his mind mechanical problems; the troublesome bee of perpetual motion got into his brain. This bothered him so much that before he had stilled its buzzing he had neglected his business, which ran down in consequence, and he lost what little money he had been able to save. His wife—for by this time he had taken one unto himself—had little patience with his inventive turn of mind, and the straits of poverty to which it had reduced them. They were now wretchedly poor, and perhaps the wails of the little Arkwrights for bread, or at least for syrup to put on it, harassed her beyond endurance. At last in anger she smashed beyond repair the models of his engines and mechanical appliances, hoping by this vigorous method to discourage any further inventive tendencies. In consequence of her lack of sympathy with the work which was life itself to him, and because of her act of violence, he left her, never forgiving her the destruction of his beloved machines.

In traveling about Arkwright fell in with a man named Kay, a clockmaker by trade. It is supposed that this man was of considerable assistance to him on account of superior mechanical knowledge, though he possessed no powers of invention. At this time the idea of contriving a machine for spinning by rollers took possession of his mind. By dint of his own wit and with the assistance of Kay, the machine was completed. The final setting up was done in the parlor of a house belonging to the free grammar school at Preston. It is supposed by some that this place was chosen because of its seclusion, the building standing far back from the street in a cluster of trees.

The very air of mystery, however, aroused the suspicions of the superstitious townspeople, who, knowing that something unusual was going on, decided that Arkwright and Kay were in league with the devil and developing new terrors in the line of the "black art." One old dame declared that she heard strange noises as if the devil were tuning his bagpipes and Arkwright and Kay were dancing to the devil's music.

Others among the work people had a clearer idea of what was going on, but were not much more pleased. They feared that hand labor would depreciate with the introduction of machinery, and Arkwright's invention was threatened with the fate of Hargreaves's spinning-jenny, which had been destroyed by a mob at Blackburn only a little while before. Amid recriminations and mutterings of distrust, Arkwright wisely packed up his machine, and betook himself to the more friendly atmosphere of Nottingham, where he exhibited his device in successful operation.

Its value won almost immediate recognition, and Arkwright was able to secure the co-operation of people of means to push his invention through the patent office. After this was done his labors were but just begun, and he had before him discouragements which would have overpowered a less persistent man. It is one thing to invent a machine and patent it, and quite another to put your invention on a paying basis. It was years before this was accomplished, and through all this time the people who had invested money for the establishment of mills to be operated by Arkwright's machinery, were not always happy and content with the lack of dividends. They expressed their opinions to Arkwright in forcible language at times.

Then, too, the hands of many workmen were against him, and manufacturers were apathetic regarding the use of his system, or stubbornly refused to recognize its worth. A mill at Chorley which he had built was destroyed by a hostile mob; worse was to follow, for his patents were contested by other inventors and manufacturers, and after expensive

lawsuits finally overthrown on the ground of incomplete specifications. In this one particular Arkwright's keen mind seems to have overstepped the bounds of good sense in the matter of caution, for he had given instructions that his patent specifications should be "made as obscure as the case would permit."

A man of less indomitable will would have retired amid all these discouragements; but Arkwright set to work to establish mills, having already secured a start in the spinning industry which could not be ruined by his enemies. He became wealthy, and was able to give his only boy, also named Richard, the education and advantages which he himself had lacked in early life. This son finally succeeded him in the cotton-spinning industry, and was an industrious and acute business man.

Indefatigable in his efforts at self improvement, the elder Arkwright at fifty years of age set to work to learn English grammar, and to improve himself in writing and spelling.

In 1786, he delivered a congratulatory speech from the wapentake of Wirksworth to George the III on the occasion of this king's escape from assassination. He was knighted by that monarch, and the poor barber's apprentice, who had begun life with no other capital than the wits nature had given him, died at the age of sixty, bearing the title Sir Richard Arkwright, rich and powerful, the father of the present factory system in England.

Not Her Way.

"I've been reading an article on electricity, John," said Mrs. Talker to her husband, as she laid down a copy of a technical newspaper she had been perusing, and looked over her glasses at her better half, "and it appears that before long we shall be able to get pretty well everything we want by just touching a button."

"It will never pay here," growled Mr. T. "You'd never be able to get anything that way."

"Why not, John?"

"Because nothing on earth would ever make you touch a button. Look at my shirt."—Stray Stories.

The Ventriloquist.

Herr Kumziba belonged to that class of merchants who are never happier than when they are extorting something in one way or another from those who sell them goods. With distressing exactitude, for instance, he tested the measure of the goods as they came into his store, and, if he found a piece but 1/8 of a yard short he would straightway claim a whole yard.

The expression "terms, 3 months" was held by Herr Kumziba to mean that the time began at the end of three months, and this time never proved to be less than four or six months while our friend seldom failed to secure an additional advantage even then by paying with a time draft.

Herr Kumziba resorted to an odd trick in order to "skin" the traveling salesmen who happened to call on him. He would open slightly the door leading to his storeroom, and, while he stuck his head partially through the opening, the traveling man would hear the following dialogue:

"Tell me, Herr Schwindelins, can we use any XY goods?"

"God forbid, we have enough in stock for the entire season."

"Yes, but some new colors, can't we lay in a few to good advantage?"

"No, we have a full assortment of all colors. We can't use any whatever before next season."

Thereupon Herr Kumziba would return with a crestfallen expression on his face to the waiting agent, and say:

"Yes, I would like very much to take this and that, but, as you yourself have heard, we cannot use any more this year. Perhaps, however,—that is, in case you could make date and terms the same as for next season—?" and the tender glances of Herr Kumziba had such an effect on the anxious salesman that he parted with his beautiful goods upon the terms proposed.

After the visitor had politely taken his leave, and while he was meditating as to the best way in which to make up the loss, Herr Kumziba would gaze with delight upon the words, "Terms, 3 months, May 1," that were nervously scrawled at the bottom of the duplicate memorandum of sale left by the visitor, since the voice from the storeroom that had so energetically objected to the purchase was no other than that of Herr Kumziba himself, who thus made his ability as a ventriloquist of use in his business.

It is said, however, that once Herr Kumziba met with a surprise when attempting to use this means of securing a favorable dating of the bill. The salesman, who had watched Herr Kumziba attentively during the dialogue, made the following response to the suggestion for a date far in the future:

"Excuse me a moment, I shall have to first telephone to my house."

He then stationed himself in the corner of the room near the door, and the following colloquy greeted the ears of the astounded Herr Kumziba:

"Herr Kumziba in Schummelstadt is willing to take a lot of XY goods but can use them only with next season's dating."

Thereupon resounded a second voice in tones of the greatest excitement:

"What! that Kumziba? That inch pincher, who pays but half what he ought to, wants to skin us again on the dating! That won't go down! Not a day longer, and if that doesn't suit him, let him buy his goods of the devil, who, some fine day will haul him in."

At this point Herr Kumziba succeeded in kicking the salesman out, but he never again resorted to this particular trick.—Manufacturist-Hanover.

—Dr. Thirdly was preaching a series of sermons on scenes from the Bible.

"Next Sunday," he announced, "I shall preach a sermon on Mount Ararat."

And after meeting let out Aunt Peebles went up and wished him a pleasant journey and safe return.

Although the wild March wind doth blow
And bluster all about,
Undaunted by inclemency Belinda goeth out;
Her skirts they flirt and flutter round
Her ankles neat and small,
But then, she knows they're pretty,
So she doesn't mind at all.

M. H. R.

Popular Superstitions.

Though we have ceased in this age of enlightenment to burn people at the stake for the practice of witchcraft; though we no longer live in the fear of spells and enchantments, still most of us would if we told the truth, plead guilty to being just a little superstitious. It may be that only one or two of the old signs and omens hold sway over us, but to those for some unaccountable reason we cling, in spite of jeers from our friends, who, no doubt, have their own little weaknesses for other superstitions.

Perhaps the origin of the old superstition about picking up a pin, was an intention to instill notions of thrift into the minds of the young.

"See a pin and pick it up
All the day you'll have good luck;
See a pin and let it lay,
Bad luck follows you all day."

So ran the old proverb, and many of us feel positively sinful when we fail to follow this precaution against the bogey man of ill luck.

To stumble when going up stairs presages good luck.

If you chance to put on a garment wrong side out on arising, you must not venture to change it, as ill luck will follow.

If after having left a house you return for something forgotten, sit down and count ten before going out again, lest you meet ill luck.

Many a household is thrown into distress by the breaking of a mirror, or because a bird flies in the window or against the pane. Both of these events are death-dealing catastrophes, according to popular superstition.

Never look at the new moon through glass or over your left shoulder. If you do, you will meet disappointment within the month.

Never trim your nails on a Friday, lest you have cause to be ashamed within a week.

In the old days when New England huskings were an institution, the girl who found a red ear of corn was the envy of her mates, as it signified that she would marry within a year.

Speedy marriage will also come to the one who inadvertently places two spoons in his tea or coffee cup.

The accidental placing of a third lighted lamp upon a table presages an early marriage in the house.

Following on the heels of these is one for the baby. In order to secure success in life, baby must fall out of his crib at least once during his first year.

Many people will not allow peacock's feathers in their houses. Others will use them as decoration, but are afraid to take them down, once they are placed on the walls. If someone entirely outside the family, however, removes them the evil spell is considered to be broken.

We all know that the penalty for walking under a ladder is death within the year (if the ladder does not fall—probably in less time if it does—but this is diverging). Not long ago this superstition was brought to my notice in an amusing way, as I passed up a rather crowded street. On the opposite side some men were working on a building, and a ladder spanned the walk. A lady reached one side just as a gentleman appeared at the other. She glanced up, and observing that she was about to step under a ladder, dodged for the street; seeing her movements, the man also looked at the ladder, then with a rather foolish expression on his face also walked around it. They met face to face outside the ladder, and looked sheepishly at one another as they passed.

The publisher of a Boston paper would never sign a contract, lease or other legal paper on a Friday or on the thirteenth day of the month, nor enter into any new business arrangement. Curiously enough his death occurred on Friday, the thirteenth day of the month.

While I do not remember just the form of ill luck which the passing of a person upon a staircase precipitates, still I have reason to know that this superstition is carefully observed by one person of my acquaintance, at least. I was coming down the stairs of an office building with a friend. Hurrying feet resounded on the flight above us, and then a messenger boy rushed across the landing and

started down the flight which we were on. Seeing him behind her, the girl sat down and spread both arms out straight, making a fence across the stairway which arrested the hurrying boy. He stopped short in gaping amazement as the girl cried: "You can't pass us on the stairs; you must go back to the landing."

"But I'm in a hurry," protested the boy.

"I can't help that; go right back, I say. Don't you know that it's unlucky to pass anyone on the stairs?"

"It'll be unluckier if I don't get this message out on time," grinned the boy, but he turned back; forming a procession of three, we filed to the landing above and began over again, the boy in the lead. He fled down the stairs in advance of us, while my companion and I followed slowly.

As we emerged from the building, I saw our boy, who had stopped to speak to some companions. As we passed he jerked his thumb toward my companion, and then tapping his forehead, said:

"Say, fellers, she's got a bug, she has."

Husbands.

It is as natural for some people to be helpful about the house as for others to make trouble and clutter. All women are expected to take pride in a well ordered home, and to be willing to work to this end. But when a man evinces an interest in the house and domestic affairs, it is by a special dispensation of Providence. His friends may laugh if it is known that one of the lords of creation has stooped to take a hand at the housework, but not so his wife. She appreciates it if she is the right sort, and her daily duties become not only lighter by his assistance, but life is cheerier and brighter because she feels the comfort of his sympathy and interest in the things dear to her.

"You know my husband and I both work," remarked a young married woman in my presence, "and you can understand that it would come rather hard on me to have to attend to all the household duties after I get home at night. But I don't have to," she said with a little touch of pleasure in her voice. "John doesn't consider it beneath his dignity to take a hand at the sweeping or to help me get supper, and sometimes when I am particularly tired he even washes the dishes while I tidy up. Then we sit down and enjoy the evening together, and I'm not all tired out and cross; and I really think John is pleased and happy to feel he has helped me. By and by when we get the little home paid for I shall give up outside work; then I shall not expect to call on him except in the case of lifting coal and such heavy things. When a woman has her time to herself she would hardly need her husband's assistance except in work too heavy for her. But when she as well as he is working to earn money to establish a home, I do not see why in justice he should not help."

In contrast to this picture was one drawn by a frail little woman. She said: "My husband never will turn his hand about the house. When I ask him to lift the tubs or bring the coal he says that's a woman's work, and keeps right on smoking his pipe. He doesn't realize that heavy lifting on my part helps bring him doctor's bills to pay; and that when I am worn out and half sick I cannot make home so pleasant as I might. But even if he did realize these things I think he would still be loth to help me."

I thought of the bright, happy face of the first speaker whose husband worked in sympathy with her, and then looked at the weary face before me, with the little, pathetic, discouraged droop at the corners of the mouth. She felt her husband's selfish disregard of her, and it took the joy out of life. She could not love and respect him as the other woman evidently did hers.

One man might be as good as the other among men, but it was in the home that the difference in their natures showed itself. One was kindly, generous and helpful in his domestic relations; the other regarded the home as something established for his especial comfort, caring much less for the welfare of his wife than for his own, regarding her in the light of a beast of burden.

Now let's one and all look around and see which of our neighbors the sermon fits.

—Tim—Faith it's a tirrible smart woman I have fer a wife. She can tell what time it is in de middle of de night in the pitch dark.

Pat—Sure an' how can that be?

Tim—She makes me get up and look at the clock!

—The minister was young and diffident, and this was his first parish. He was struggling with an elusive quotation.

"Brethren," he said, "it is easier for a needle to go through the eye of a cam——. It is easier for the eye of a camel to go through the knee of a needle——. It is easier for the eye of a needle to go through the knee of a camel——. It is easier for the knee of a camel to go through the eye of an idol——." At last, "It is easier for a camel to go through the knee of an idol than for a wicked man to enter the kingdom of Heaven," and the parson went peacefully on, feeling that at last he had mastered the situation.

Two Friends

Any man who uses CLING-SURFACE is a friend to it because it stops all slipping of his belts.

This permits them to be run easy under full load.

An easy belt saves wear on bearings and oil for them. The belts last longer. Time usually spent in tightening is saved.

And the constant stoppage and worry is done.

A belt free from slipping don't run off.

It transmits more load, and evenly—the cloth will show the difference.

Try it. Order. Test.

Pay only if satisfactory.

If not return it and we pay freight. Start now.

CLING-SURFACE MFG. CO.

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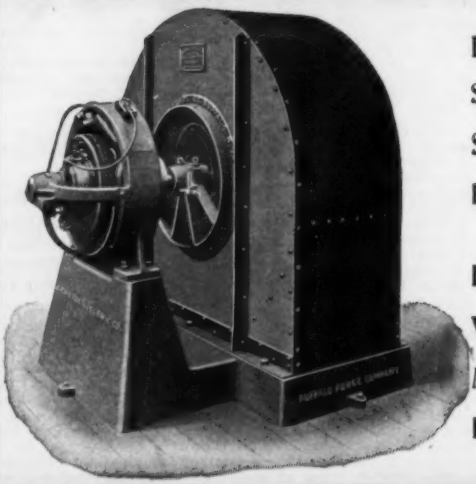
NEW YORK, 39-41 Cortlandt St.
BOSTON, 170 Summer St.
PHILADELPHIA, The Bourse.

Buffalo Forge Company Buffalo



Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
Mechanical
Draft, etc.

Buffalo Forge Company Buffalo

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Praray, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
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Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
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See also Mill Supplies.

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Belt Hooks.
Bristol Co., Waterbury, Ct.

Belt Lacing Machine.
Diamond Drill & Machine Co., Walnut St, Bridgeboro, Pa.

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The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
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Braiding Machinery.
New England Butt Co., Providence, R. I
Textile Machine Works, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Parks & Woolson Mach. Co., Springfield, Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calculating Apparatus.
Pennsylvania-Eastern Syndicate, Bourse Building, Philadelphia, Pa.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc

Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing.
Riverdale Woolen Co., Northbridge, Mass.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Sargent's, C. G. Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W. & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A. & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
Livermore, Homer P., 85 Pearl St., Boston.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.

Cloth Boards.
Chaffee Bros., Oxford, Mass.
Rice, T. B., Mifflin St. Wharf, Phila.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.

Combs (Wool and Cotton)
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machinery Co., Chicago, Ill.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.

Cop Tubes.
See Paper Tubes.

Copper Gaskets.
U. S. Mineral Wool Co., 149 Liberty St., New York.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Cotton.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles, W. B., Amsterdam, N. Y.

Cotton Bale Ties.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Eccles, James, 2424 Amber St., Philadelphia, Pa.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 188 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G., Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Stafford, G. W. Mfg. Co., Readville, Mass.
Whitin Machine Wks. Whitinsville, Mass.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Cotton Softeners.
Boston & Lane, Boston, Mass.

Cotton Waste.
Blaisdell, Jr., Co., S., Chicopee, Mass.
Becker, C. W Agt., Amsterdam, N. Y.
Charles, W. B., Amsterdam, N. Y.

Cotton Yarns.
Moeller & Littauer, 100 Greene St., New York.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hartford Blower Co., Hartford, Conn.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Hartford Blower Co., Hartford, Conn.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.

Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-180 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Conoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg Pa.

Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Silver Spring Bleaching Co, Manayunk, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springneld, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Fittston, Pa.
Dubois, A. N., 2170 Sedgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Eccles, James, 2424 Amber St., Philadelphia, Pa.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Hartford Blower Co., Hartford, Conn.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Ford, J. B. Co., Wyandotte, Mich.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Cassella Color Co., 182 Front St., New York.
Dillon & Co. 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgely Ave., Phila., Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Ford, J. B. Co., Wyandotte, Mich.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J. & Co, 104-108 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H. S., 115 So. 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., Lansdowne, Pa and 2123 Market St, Philadelphia, Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Enamel Goods and Supplies.
Hartson, L. M. Co., North Windham, Conn.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co., Akron, Ohio.
The Sterling Blower & Pipe Mfg, Co., 44 Hupshope St, Hartford, Conn.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds.
See Automatic Feeds.

Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.
Steam Boiler Equipment Co., 20 West Houston St., New York.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E. Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.
Guides.
Hartson, L. M. Co., North Windham, Conn.
Heating.
See Ventilating.
Heddles.
Leisenring, John, Mfg. Co., Philadelphia, Pa.
Steel Heddle Mfg. Co., 1842 Germantown Ave., Phila.
Watson, L. S, Mfg. Co, Leicester, Mass.
Hoisting Machinery.
Larrabee, John E., Amsterdam, N. Y.
The Eastern Machinery Co., New Haven, Conn.
Hose.
Boston Belting Co., Boston.
Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Humidifying Apparatus.
American Air Moistening Co., Boston.
Hydro Extractors.
American Tool & Machine Co , Boston.
Rusden Machine Co,. Warren, R. I.
Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.
Jacquard Cards.
Rogers, H. E, South Manchester, Conn.
Key Seaters.
Leisenring Mfg. Co , Philadelphia, Pa.
Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N. J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.
Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
American Knitting Machine Co., 6th and Arch St. Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C., Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm, & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co , Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St , Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co , Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co. Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston.
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Lightning Apparatus.
Pennsylvania Eastern Syndicate, Bourse Building, Philadelphia, Pa.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A. & Son Co, Phila. Pa.
Howard, Geo. C., Lansdowne, Pa. and 2128 Market St , Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Stafford, G. W. Mfg. Co , Readville, Mass.
Whitin Machine Works, Whitinsville, Ms,
Loom Harnesses.
Jeffrey Loom Harness Co, The Henry, Woonsocket, R. I.
Leisenring, John, Mfg. Co., Philadelphia
Loom Pickers.
Loom Picker Co., Biddeford, Me.
Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.
Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.
Lumpers.
Gerry, George, & Son, Athol, Mass.
Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia
Machinists' Tools.
Dodge Mfg. Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.
Mails.
Walder, J. Paterson, N. J.
Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St Worcester, Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg , New York.
Parks & Woolson Mach. Co., Springfield Vt.
Mechanical Draft.
American Blower Co., Detroit.
Hartford Blower Co., Hartford, Conn.

Mechanical Engineers.
Buffalo Forge Co., Buffalo, N. Y.
Green, Samuel M., Holyoke, Mass.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave. Hartford, Conn.
Sturtevant Co., B. F., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 13th St., Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.

Mill Sewing Machines.
(See Sewing Machines and Supplies.)

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Hartson, L. M. Co., North Windham, Conn.
Hoag, A. W. & Co., Reading, Pa.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Larrabee, John E., Amsterdam, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
Main Belting Co, 1219 Carpenter St, Phila.
National Supply Co., Paterson, N. J.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Nails (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Oils.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Overseaming Machines.
Industrial Mfg. Co, Camden, N. J.
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs Sewing Machine Co., New York.

Oxidizing Machinery.
Hoag, A W & Co., Reading, Pa.

Packing.
Boston Belting Co, Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Paper Boxes.
Rosenberg, Henry, 107 Greene St., New York.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington, D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Portable Hoists.
Larrabee, John E., Amsterdam, N. Y.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Carpenter, Geo. B. & Co, Chicago Ill.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Hoag, A. W. & Co., Reading, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford. J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms
Eccles, James, 2424 Amber St., Philadelphia, Pa.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa and 2123 Market St. Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulley Covers.
Warren Co, The Inc.), 34 Jackson St, Chicago, Ill.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.

Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.

Reeds and Harnesses.
Jeffery Loom Harness Co, The Henry Woonsocket, R. I.
Leisenring, John, Mfg. Co., Philadelphia, Pa.

Remnants.
Feingold, H. & D., 91 Bedford St., Boston.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros. S. Manchester, Ct.

Ring Travellers.
DeHaven Mfg. Co , 50 Columbia Heights, Brooklyn, N. Y.
National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.

Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co., Mishawaka, Ind.
Link Belt Mfg. Co., Chicago, Ill.

Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford. Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Card Mounting Machines.
Cummings-Angelum Machine Co., 320 Broadway, New York.

Sample Cards and Mounting.
Cummings-Angelum Machine Co., 320 Broadway, N. Y.
Merchants Sample Card Co., 33 Sullivan St., New York.
Rosenberg, Henry, 107 Greene St., N.Y.

Scales
Sweet& Doyle, Cohoes, N. Y.

Scallop Machines.
Merrow Machine Co., Hartford, Conn.

Schools.
American Correspondence School, Boston, Mass.
American Correspondence School of Textile, New Bedford, Mass.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shocks.
Rice, T. B., Mifflin St. Wharf, Phila.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Silo.
Schlichter, J. F. 321 Vine St., Philadelphia, Pa.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Sizing. Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St., New York.

Slashers.
Cohoes Foundry & Machine Co. Cohoes, N.Y
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Smoke Prevention.
Steam Boiler Equipment Co., 20 West Houston St , New York.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.

Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Meter.
St. John, G. C., 143 Liberty St., New York.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Steam Boiler Equipment Co., 20 West Houston St., New York.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
St. John, G. C., 143 Liberty St., New York.
Sturtevant Co., B. F., Boston.

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker Stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Cypress Lumber Co, Apalachicola, Fla.
Hoag, A. W. & Co., Reading, Pa.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Schlichter, E. F., 321 Vine St., Philadelphia. Pa.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W. Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St.,N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Rheinstrom, R. A., 176 West York St., Philadelphia, Pa.
Weimar Bros, 1317 East York St, Phila, Pa.
Young, Wm. M., 2421 Mascher St., Philadelphia, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hartford Blower Co., Hartford, Conn.
Massachusetts Fan Co., Exchange Bldg., Boston.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Warp Coiler.
Eccles, James, 2424 Amber St., Philadelphia, Pa.

Warp Stop Motions.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadel.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.

Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.

Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Hoag, A. W. & Co., Reading, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
Ford, J. B. Co., Wyandotte, Mich.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Woolen and Worsted Machinery.
Altemus, W. W. & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila
Arlington Mch Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co. No. Adams, Mass.
Jefferson, Ed. & Bro, 28 Strawberry St, Phila, Pa.

Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Philips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Shoddies.
Becker, C. W., Agt., Amsterdam, N. Y.
Riverdale Woolen Co , Northbridge, Mass.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattahoochee, Ga , Treasurer's Office, Springfield, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
Buckingham & Paulson, 83 Leonard St. New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook. Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mig. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Moeller & Littauer, 109 Greene St , New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaeoochee, Ga., Treas- Office, Springfield, Mass.

Cotton Yarns Wool Spun.
Broadbent, J. & sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.
Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Orswell Mills, Fitchburg. Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W. Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Mercerized Yarns.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass,
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finishing Co., Holmesburg, Pa.

Mohair Yarns.
Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W. Thread Works, Westfield, Mass.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Hosiery and Knitting Yarns.
Barnesville Mfg. Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave. Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St., New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.
Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila. Pa
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.
Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.
Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Harper, E. J., 395 Broadway, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Moeller & Littauer, 109 Greene St., New York.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
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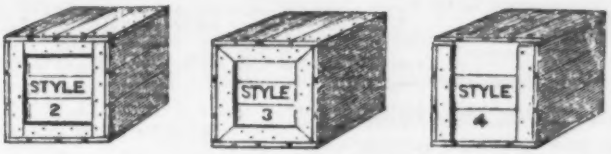

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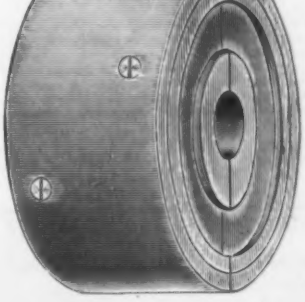

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First-class hosiery knitting machine fixer, who thoroughly understands knitting; one experienced with the National Automatic Knitter referred. State where at present employed, and length of time at present place. Address "Auto," care Textile World.

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Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

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1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1750 **Wanted.** Position as superintendent of cotton mill by a practical carder and spinner. First-class references from former and present employers.

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1806 **Wanted.** A position as supt. by an up-to-date man full of push and energy. A hustler and a good manager Anyone needing a man to manage their mill will do well to correspond with him. Is up in woolen manufacture of flannels, blankets and jeans; in cotton of drills, sheetings, shirtings and cotton or jute bagging. Wages from $3 to $4 per day and house rent free. Has had long experience on above goods, especially in weaving.

1975 **A Linen Manufacturer,** who thoroughly understands linen and cotton fancy goods and damasks, is open to position as Supt. 40 years of age, Irish, married. Can refer to well-known mill owners. Terms reasonable.

1938 **Supt.** or Supt. and Designer. Age 33; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding an spinning machinery.

1957 **Supt.** of cotton cloth or yarn mill, 37 years old, English, married, is open to a position. Thoroughly familiar with coarse and fine yarns up to 150s. Best of references. Will go to any part of the United States.

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Manager or overseer of narrow fabric plant. Age 32, married; 10 years' experience in the manufacture of all kinds of silk and cotton narrow fabrics. Now employed but would consider an offer. Best of references. Address Box 326, care Textile World.

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1930 **Asst. Supt.,** woolen or worsted, or overseer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1924 **Assistant Supt.,** boss weaver and boss dresser desires a position in a woolen mill 39 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere

1936 **Supt. or Designer,** an American, married. 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to date in methods. Moderate wage.

1976 **Manager and Buyer.** blankets, rugs and government cloths. Young Englishman, 30, managing a plant of 19 sets cards and 200 looms in England, desires similar position in the States. Thoroughly practical in every department. Salary according to results

1829 **Woolen Supt.,** or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jacks and mules, and Crompton & Knowles.

WOOLEN CARDERS.

1953 **Boss Woolen Carder,** experienced on all classes of wool, all cotton, wool and cotton, and shoddy mixes, desires a position. Is an American; married; 40 years old. Leaving present position on account of shutdown. Is steady, reliable, and can give good references from last employers. Three workers in family.

1270 **Boss Carder** (and spinner, if desired) in an underwear or hosiery mill. Fine and heavy wool and cotton. German; age 34. First class man in every respect. Excellent references.

1617 **Boss Carder or Second Hand.** Has held several first-class jobs also has had experience in spinning. Can accept position at once. All grades of stock, including shoudies, and cotton and wool and all wool.

1977 **A Boss Carder** who understands both English and American cards on almost all grades of stock, desires a position. 30 years old, Swedish-American, single. Is a steady, reliable man, and a good carder. Terms reasonable.

1944 **Carder,** or carder and spinner. Age 48; unmarried; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excel ent reference from past employer.

COTTON CARDERS.

1968 **Overseer** of cotton carding and combing, who understands setting up and starting new machinery, is open to a position. 33 years old, English, married. Is especially good on fine combed Egyptian and Sea Island yarns. Best of references. Moderate wage.

1817 **Overseer of Card Room** desires a position in cotton mill. About 26 years of age, steady and strictly temperate. Has been six years second hand and two years overseer. Best of references

1799 **Boss Carder.** Age 32; American; married. Has worked on beavers, kerseys, chinchillas, cloakings and suitings. Is familiar with Davis & Furber, Cleveland and Furbush machinery. Wants not less than $2 50 per day Excellent references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1931 **Overseer of Carding and Combing;** 33 years old; American; single. Has worked on all classes of fine combed work; both American and English machinery. Can take place immediately. 12 years in a large New England mill.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1929 **Overseer** cotton carding and spinning is open to a position in any part of U. S. Age 31; German; single. 12 years' experience as overseer carding in important cotton spinning mills in France, Germany, Bohemia and Italy. Specialty of Egyptian and American combed fine yarns Best of references.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1969 **Overseer** of woolen spinning would like a position in a good mill. Has worked on woolen, cotton mixes, and shoddies from 1 to 3½s. 26 years of age, temperate and steady. Good references.

1912 **Boss Worsted Spinner** on cop- and flyer frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1 ½s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ½ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

1956 **Overseer Woolen Spinning,** 34 years old, American, married, desires position. Understands Johnson & Bassett, Davis & Furber, Cleveland Bros. and Woonsocket mules; and has made all wool, merino and shoddy mixes. Can give good references.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

1950 **Overseer** or second-hand of cotton mule spinning desires a position in the Southern States at reasonable wages. Is a good fixer and has made yarns ranging from 4s to 40s. 39 years old; German; married. Best of references. One worker in family—drawer in.

1915 **Overseer of Ring Spinning,** or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all American machinery. An American; 33 years of age; married. Best of references.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2[illegible]; English; single. Can furnish references as to ability and character.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¾. Will accept an average salary. At present employed, but wishes to better himself.

WOOLEN WEAVERS.

1937 **Boss Weaver.** Can furnish excellent recommendations. Is a first-class man on all kinds of fancy woolen goods, and is thoroughly posted on Crompton & Knowles looms. Wants a place at $2.75 or $3.00 per day. Will go anywhere. Age 39; American; married.

1940 **Boss Weaver or Designer,** or could fill a position as all around man in a small mill. Age 42; Scotch; married. Worked on fancy cashmeres, blankets, flannels, carriage robes, and other fancy goods. Is familiar with Crompton & Knowles, Davis & Furber, and other looms. Wants to go West or South.

1947 **Boss Weaver,** designer or superintendent. American; married; age 36. Fancy cassimeres and worsted cloakings; most all grades of goods for ladies' and gents' wear. Crompton & Knowles and Davis & Furber looms and Jacquard.

1959 **Boss Weaver,** who is familiar with cotton, woolen and worsted looms and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver,** familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

1949 **Boss Weaver,** capable of taking entire charge of a small woolen mill, will be open to a position in a few weeks. 44 years old; American; married. Familiar with all classes of woolen and worsted goods. Good references. Three workers in family.

COTTON WEAVERS.

1235 **Overseer of Cotton Weaving,** with long experience in large Eastern cotton mills, is open to a position. Has handled prints, twills, sateens, lenos, cheviots, dress goods, and also Jacquard cloths. Thoroughly understands Lowell, Crompton & Knowles, Whitin and English looms. 37 years of age; American; single. Best of references from former employers.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1536 **Boss Weaver or Superintendent.** Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

KNITTERS.

1943 **Fixer or Foreman.** Age 27; American; married. Has had five years' experience on knitting machines, including Standard B and C machines, can handle new Victor machines, also sewing machines. Wants to change on account of location.

1945 **Asst. Supt.,** or overseer of a large stitching department in knit underwear mill. Wilcox & Gibbs sewing machines, Union Special and loopers.

1946 **Supt.** of knitting mill, or would take position as boss knitter. Age 29; Canadian; married. Fleece-lined balbriggan men's and children's ribbed fancy tops and nearly all kinds of knit underwear. Is familiar with all makes of American knitting and finishing machinery, with the exception of Cooper's circular rib. Will not go West or South.

1971 **Foreman** of men's underwear who is familiar with Nye & Tredick, Snyder & Fisher machines, etc., is open to a position. Thoroughly understands cutting. Age 35, American, married. Is a steady, competent man and understands his business. Good references.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of Chemnitz fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 40 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishments in New York and Chicago, and already owns a complete line of glove making machinery.

1973 **A Boss Knitter** on ribbed underwear, cotton or wool, is open to a position. 27 years old, French Canadian, married. Has been boss knitter in the United States for several years, and can give good references. Thoroughly familiar with all well-known makes of ribbed underwear machines. Wants $3 per day.

1961 **Supt. or Manager** of large hosiery yarn mill will be open to a position shortly. American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery. Will work for $2.50 or more, according to position.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 28 years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

DYERS.

1972 **Boss Dyer** of large experience on cotton, cotton and wool, shoddy waste, camel hair raw stocks; all wool flannels, ladies' dress goods, worsteds, friezes and Union piece dyes; and skein dyeing, hosiery, etc., is open to a position in a woolen, worsted or hosiery mill. 50 years of age, English (naturalized), married. Best of references. Terms moderate.

1978 **Asst. Chemist** in laboratory of a mill or dyestuff house. Has taken course in chemistry and dyeing in Georgia School of Technology, Atlanta. Has also had some experience in the dyehouse of a woolen mill. 21 years of age, American, steady and well informed in this line of work. Will start for moderate wages.

1979 **A Boss Dyer,** who has been assistant dyer in one of the largest mills in the United States for the last ten years, is desirous of making a change. Is familiar with wool slubbing, worsted yarn, and pieces; cotton raw stock, skein and warp yarn, pieces, and also Union goods. Understands all modern dyeing machinery. Best of references. Salary moderate.

1966 **A Color Mixer,** chemist or cotton piece dyer is open to a position English; 30 years old; married. Was assistant manager of large print works in England for three years, and can refer to well-known men. Terms moderate.

1505 **Boss Dyer** 11 years experience coloring according to the requirements of the trade, on all kinds of wool, worsted yarns, worsted piece dyes, cotton warp worsted piece dyes, cotton and shoddy piece dyes, shoddy, raw cotton and cotton yarns. Willing to work for reasonable wages.

1781 **Boss Dyer and Finisher.** Age 20; Scotch; single. All wool and cotton mixed blankets, fine and coarse flannel. Some cassimeres and shoddy goods. Refers to past employers.

1948 **Assistant in Dyehouse.** Age 20; single; American. Has a thorough knowledge of the application of aniline colors on cotton, wool and piece goods.

1952 **Supt.** of cotton printing, dyeing and finishing. Age 39; American; married. Has worked on calicoes, shirtings, cretonnes, sateens, etc.

1864 **Boss Dyer.** Age 34; American; married; desires a position. Has had good experience on wool and cotton mix goods. Employed at present but could take new position in about one week. Good references.

1954 **Dyer and Bleacher** of fast, common and one dip colors on cotton warps and skein yarns, is open to a position. Scotch Irish; married; 38 years of age. Excellent references.

1933 **Foreman Bleacher** and Dyer on cotton goods. Has a specialty of dyeing fast oxidized black on piece goods. Is also a color dyer Age 34; English; married. Prefers Middle or Southern states.

DYEWORKS OR PRINTWORKS.

Englishman, age 29, married, cotton piece dyer or colormixer; understands color mixing for discharge styles; good chemist. Best references. Moderate terms. Address Edwards, care Textile World.

FINISHERS.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1911 **A Boss Finisher** of over 20 years experience on cassimeres, flannels, dress goods, cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1526 **Foreman of Finishing Room,** Folding Packing, etc. Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 20 years in this country. Can give good references.

1970 **A good Second-hand Finisher** who thoroughly understands Union cassimeres, meltons and satinets, would like a position. 30 years of age, American, married. Well up on all well-known makes of machinery, and capable of taking a boss job. Good references. Reasonable wages expected.

DESIGNERS.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms, all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1962 **Designer,** boss weaver, or both, desires a position in a woolen or worsted mill. Is at present employed as designer and boss weaver on worsted and woolen dress goods and suitings, and giving satisfaction. 30 years old; Swede; married. Expects moderate salary. Will go to any part of the United States. References from well-known textile men.

1773 **Designer** of worsteds and cottons is open to a position. Has workep on suitings, vestings, worsteds, fancy Jacquard work on narrow fabrics and dress goods. Understands English and Crompton & Knowles looms About 25 years old, steady and strictly temperate. Good references. Terms moderate.

MISCELLANEOUS.

1935 **First-class Twister** and Enter ing. 25 years' practical experience wishes steady position in country place.

1489 **Boss Finisher.** Second hand or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1835 **Beamer, Twister,** also under stands drawing in and splitting. Age 27; American. Has worked on ging hams, dress goods, shirtings and cotton worsted.

1965 **A Second-class Engineer,** 48 years of age, American, would like a position as such in a N. E mill. Is steady and reliable. Good references from former employers.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical scho l. Learned carpenter's trade and machinist's

1466 **Overseer of Dressing.** Experience on worsted cassimeres, dress goods, flannels. Good references, temperate, age 32, married.

1731 Young man 32 wants position in charge of weave room. Been twenty years in cotton mill, and has had experience on many kinds of looms, including Draper. Can do own dyeing and figuring. Is accustomed to fancies, and can furnish best of references. Is open to go anywhere, but prefers Japan.

1866 **Overseer of Burling** and Sewing o Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1659 **Bleaching Overseer.** Seven years' experience as overseer, and has first-class references. Has handled all classes of work in the cotton piece goods line, from heavy shoeduck, drills, etc. down to cheesecloth, and bag goods, also all kinds of colored work, such as colored bordered handkerchiefs, colored striped shirtings, colored spots, also white and colored towels, linen crash, all kinds of cotton flannels, etc.

1726 **Superintendent** broad silks from time of leaving weave room till ready for consumer, piece dye cotton and silk mixtures included, or will accept overseership in any department connected with above. 35 years old; American; married Is familiar with most all machinery used in this branch.

1881 **Paymaster or Bookkeeper.** Agent or Manager Wood or Iron working plant or small cotton mill. 28 years' experience. Expert accountant. Can take charge of all the office work in large factory or do all myself in small factory. Good references. Will go anywhere in New England or Middle States.

IMPORTANT ANNOUNCEMENT

To Readers of The TEXTILE WORLD.

THE American School of Correspondence, having prepared a course of instruction by mail in COTTON SPINNING, WOOLEN AND WORSTED SPINNING, COTTON, WOOLEN AND WORSTED PREPARATION, TEXTILE DESIGN, FABRIC STRUCTURE AND CLOTH ANALYSIS, WEAVING, CHEMISTRY, DYEING and other branches of

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The only expense is the actual cost of instruction papers and postage. The course enables mill men to secure promotion by increasing their knowledge of Textile Engineering, and gives men in the selling department a technical knowledge of yarns and fabrics. Studies are carried on at home and do not interfere with the student's work.

Handbook describing the courses in Textile, Electrical, Mechanical and Steam Engineering will be sent.

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1337 **Assistant Supt.,** experienced in the manufacture of bookbinders' cloth, window shades, etc., is open to a position. English; 45 years of age; married. Prefers South. Best of references.

1538 **Master Mechanic.** Age 41; married; American. Is acquainted with all makes of looms, cards, pickers, frames, etc. At present employed, but wishes to better himself. Refers to present and former employers.

1404 **Chief Engineer and Machinist.** A man who is fitted by education and experienc to take charge of a large plant. Well acquainted with all kinds of mill machinery. Has hadcharge of erection of steam, water and electrical plants, pumping machinery and cotton mill equipment. Would be an excellent man to superintend the erection of a new plant and economical operation of same.

1817 **Chief Engineer or Master Mechanic.** First class man for a cotton mill. Has been employed as machinist in various cotton mill repair shops, and in repair shops building new cotton machinery. Proficient as a draftsman on mechanical drawing. 33 years old; married.

1764 **Engineer and General Repair Man.** Age 45; American; married. Wants $2.50 to $3.00 a day. Over twenty years' experience.

WANTED—A BOSS FULLER

To take charge of the fulling and scouring department in a large mill. Must be of steady habits and well experienced in all kinds of wool and worsted fabrics. Give references and state wages expected. Splendid chance for the right man. Address "Fuller," care Textile World.

USEFUL BOOKS.

Weave Lexicon for Harness Weaving. By Franz Donat, A. Hartleben, Wien. 160 pages; price $2.00.

This book contains 4100 different diagrams of weaves for the harness loom. The 160 pages contain no reading matter, but are filled with the weave diagrams. It will prove a valuable book to the designer and weaver, who will find here weaves for a vast number of different effects. An inspection of these colored diagrams will prove an inspiration to the designer. He will see here the possibilities of harness weaving and not only find the weaves exactly suited to his needs, but receive suggestions which he can amplify to produce original designs.

Practical Carder. By James H. Greer. Price 50 cents.

This book begins with a short description of the cotton plant and fibre, which is followed by chapters on the following subjects: Ginning; Baling; Opening and Mixing; Breakers and Lappers; Carding; Railway Heads; Drawing Frames; Slubbing and Roving Frames; Picking Department; Calculations for Cards, Railway Heads, Drawing Frames, Slubbing and Roving Frames.

It is of a handy size for the pocket, and will be found valuable to all engaged in cotton manufacturing.

The Students' Cotton Spinning. By Joseph Nasmith; 598 pages; price $3.00.

This is a standard work on spinning and treats of the following subjects: Evolution of Cotton Spinning; Varieties of Cotton; Mixing, Opening and Scutching; Carding; Card Clothing and Grinding; Combing and Drawing; Slubbing and Roving; The Theory of Spinning; Mule Spinning; Ring Spinning; Reeling; Winding and the Manufacture of Thread; Waste Spinning; Arrangement of Drafts and Production.

Science of Colour Mixing. David Paterson; 124 pages; price $3.00.

The author of this book, who is a dyer, has treated in a very practical manner the science of mixing ordinary colors and dyes thus producing a work that should be in the hands of every dyer and colorist. There are five colored plates showing the various colors and effects produced by mixing them. The book also contains eleven dyed samples together with recipes.

Woolen and Worsted Manufacture. By Robert Beaumont; 386 pages; price $2.00.

The following is a brief outline of the contents given by chapters: 1, Materials; 2, Woolen Thread Manufacture; 3, Worsted Thread Construction; 4, Yarns and Fancy Threads; 5, Loom-mounting; 6, Principles of Cloth Construction; 7, Hand Looms; 8, Power Looms; 9, Weave Combinations, Drafting; 10, Pattern Design; 11, Color Applied to Twilled and Fancy Weaves; 12, Backed and Double Cloths; 13, Analysis of Cloths and Calculations; 14, Cloth Finishing.

Dyeing Cotton Fabrics. By Franklin Beech; price $3.00.

Cotton dyers will appreciate the work on account of its being devoted exclusively to the dyeing of goods, which are wholly or partly composed of cotton. This specializing of a textile work greatly increases its value in the department of which it treats. The following is an outline of table of contents: Scouring and Bleaching of Cotton; Dyeing Materials and Manipulations; Principles and Processes of Cotton Dyeing; Dyeing Union Fabrics; Dyeing Half Silk Fabrics; Washing, Soaping and Drying; Testing the Colors of Dyed Fabrics; Experimental Dyeing; Comparative Dye Testing.

Spinning Woolen and Worsted. By W. S. B. McLaren; 251 pages; price $1.50.

This is a very practical work on the spinning of woolen and worsted yarns. The following is an outline of the table of contents: Nature of Wool; Wool Sorting; Wool Washing and Oiling; Difference Between Woolen and Worsted; Preparing and Carding for Combing; Wool Combing; Drawing; Worsted Spinning; Woolen Carding; Feeding, Condensing and Spinning; Twisting, Reeling and scouring.

Draw Frames and Fly Frames. By Thomas Thornley; 380 pages; price $3.00. This is the only work especially devoted to the drawing and roving processes, and is intended to benefit those who are directly concerned in the practical operation of the machines under discussion, with particular stress on the points which will give the best results from machines in their actual manipulation. Among the subjects treated may be mentioned the following: Drawing Frames; Fly Frames—Winding, Building Motion, Differential Motions; Roller Setting and Drawing; Defective Roving Bobbins; How to Put up Frames; etc.

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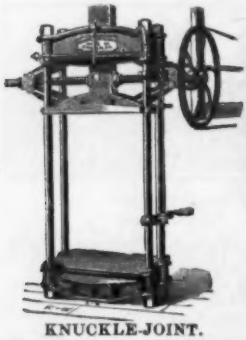

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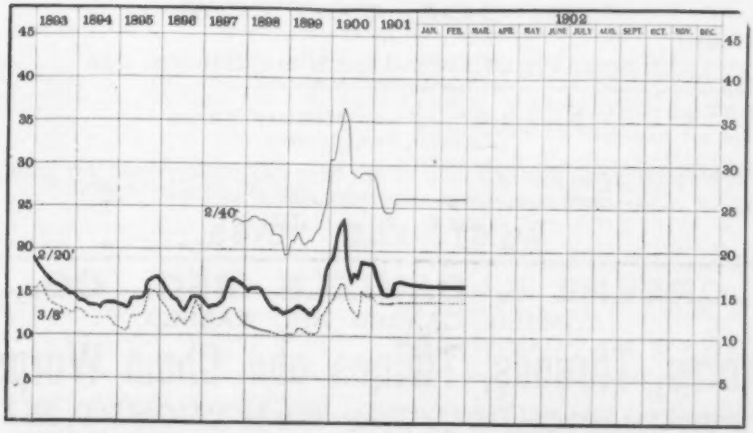

GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Eastern Yarn Market.

The improvement noted last month in the cotton yarn trade has been maintained, and at the beginning of March a more hopeful feeling, based upon an increased call for goods, is found in all branches, but more especially in fine yarn.

Business is better with both knitters and weavers. The advance in print cloths reflects the strong position of other branches of the cotton cloth industry.

The knitters are having a much better trade than was anticipated. The supply of manufactured goods is very large, and the improvement of business in the face of this supply could be brought about only by a general prosperity such as the country is now enjoying.

The weakest and the strongest spots in the cotton yarn market are found at opposite ends of the quality line. Fine Egyptian yarn occupies the best position, while in coarse counts the depression of the past year is still painfully evident. We quote as follows:

Eastern Cop Yarns, Carded.

6s	13½-14¼
8s	14-14¾
10s	14½-15
14s	15½-16
16s	16-16½
22s	17½-18¼
24s	18-18¾
26s	18½-19¼
30s	20¼-21¼
34s	21½-22¼
36s	22½-23¼
40s	23½-24¼

On cones, ¾c. more up to 14s; 1c. more than 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carder Peeler.

12s	16½-17¼
14s	16¾-17½
18s	17¾-18½
20s	17¾-19
22s	18½-19½
26s	20-20¾
28s	20½-21¼
30s	21-21¾
36s	21½-22¼
40s	25½-26¼
45s	27½-28¼
50s	31½-32¼
55s	34½-35¼
60s	39½-40¼

Eastern Two-Ply Warps, Carder Peeler.

2/30s	21¼-22¼
2/36s	23½-24¼
2/40s	25½-26¼
2/45s	28½-29¼
2/50s	32¼-33¼
2/60s	40½-41¼

Egyptian Weaving Yarns.

Single Skeins Combed.

30s	30½-31¼
35s	32½-33¼
40s	34½-35¼
45s	36½-37¼
50s	38½-39¼
55s	40¼-41¾
60s	48-48¾
70s	58-58¾
80s	66-66¾
90s	70½-71¼

Two and Three Ply Skeins, Combed.

30s	32-32¼
36s	34-34½
40s	36-36½
45s	36½-37½
50s	41½-42½
55s	45-46
60s	47-48
65s	52-53

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of
White, Colored, Fancy and Double Twist

Cotton Warps

HOUSATONIC, MASS. 4s to 60s.

OIL SEEDS PRESSING CO.,

Manufacturers and Importers of

VEGETABLE OILS.

15 to 25 Whitehall Street, - - New York.

DAVIDSON & BROOKE, ORIANNA BLEACH WORKS.

BLEACHERS

Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.
Turkish Towels made up to suit the trade and shipped to any point.
2560 No. 3rd St., PHILADELPHIA.
Correspondence solicited.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL WORSTED, MOHAIR AND SILK,

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

70s	55-56
75s	59-60
80s	68-70
90s	74-75

Egyptian Yarns on Cops.

Combed.

6s and 8s	21¼-21¾
10s and 12s	23¼-23¾
14s	24-24¾
15s and 16s	25¼-25¾
18s and 20s	25¾-26¼
22s	26¼-26½
24s	26¾-27¼
28s	28¼-28¾

Philadelphia Yarn Market.

It is still very hard to make satisfactory price list as there are not only many different qualities in the market, but different conditions. Stocks are generally reduced, but there seems to be no limit to the reductions that some houses are able to make on yarn.

We hear of sales, especially on coarse cone yarn, as much as 1c. to 1¼c. under any established market price,—particularly 22s cones. The prices fluctuate ¾c. to ½c. per pound. Cuts are made notably on such standard yarns at 14/2 skein, 20/2 skein and warps, 20/1 warps, 30/2 warps. Customers are able to buy these numbers generally at considerable reduction.

The market, however, is quite active, but spinners complain the only way they can figure any price or make any sales, is on a basis of charging for nothing but their cotton, wages and actual weekly running expenses, and that they come out short on this basis.

We quote as follows:

Southern frame cones (good quality):—

10s	14
12s	14½
14s	14½-15
16s	15-15½
18s	15¼-15¾
20s	15½-16
22s	16
24s	16½-17½
26s	17-17½
30s	18-18½
40s	25
50s	30-31

Southern high grade mule yarn:—

Cones.

10s	15
12s	15½
14s	16
16s	16¼-16½
18s	17

Southern high grade mule cones:—

20s and 22s	17-18
24s	18½

Southern frame yarn, lower grades:—

6s and 8s	13
10s	13½

Eastern cones (high grade quality):—

10s	15½-15¾
12s	16-16¼
14s	16½-17
16s	17-17½
18s	17½-18
20s and 22s	18½-19

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited,

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

J. S. DODDS,
517 Wool Exchange, New York, N. Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel. Chardonnet Artificial Silk.
Mercerized, Turkey-Red, Swiss Emb. Yarns.
109 Green St., NEW YORK.

E. C. HARPER,
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

Eddy & Street,
COTTON, WOOLEN, **YARNS** AND **BRAIDS** WORSTED, SPUN SILK.
PROVIDENCE, R. I.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20.000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS

In gray and all colors, single or in any twist.

NOVELTY YARNS

In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

Lower grades, Eastern yarn:—

6s and 8s	13-13½
10s	14-14½

Rise ¼c. per number to 16s.

Besides this, there is some comber waste used, that is made into 8s to 10s cones and sold at 13½ to 14c.

Skein yarn (mostly Southern):—

4s to 6s soft	13½-14
10s to 12s	14
14s to 20s	14½-15
22s	15-15½
14/2	13¾-14
16/2	14-14¼
20/2	15-15½
30/2	17½-18
40/2	22-23
16/3 slack	15-15½
12/3 slack	14½
8/3 carpet	13¼-14

Skein yarn (mostly Southern):—

8/3 slack	14-14½
9/4 slack	14-14½

Warps (mostly Southern):—

14s to 16s	14½-15
20s and 22s	15-15½
26s	15½-16½
14/2	14½-15
16/2	15-15½
20/2	15½
24/2	16¼-16¾
30/2	17½-18
40/2	22½-24
40/1	24-25

Mixed colored yarns (mock twist, half colors):—

6s to 10s	14½-15
12s to 14s	15½-16
16s to 18s	16½-17

Silver and jaeger, 1½ to 2c. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Combed yarn, 5c. to 6c. above carded.

Wool spun cotton yarn and merino in rather better demand. Some job mills are running to very good advantage, by making a great variety of yarn, mostly low grades.

Worsted Yarn.

Spinners continue busy and with many orders ahead. So great was the demand for worsted yarn during the latter part of the past year that it was more profitable to sell the yarn than to weave it into cloth and sell the cloth, and on account of this condition some of the mills with spinning and weaving stopped their weaving and sold their yarn production.

Mills on high grade cloths continue to run slowly, and this will be the case until the middle of March to first of April. The fine fancy worsteds, like the rest of the fancy line, are selling but slowly, but as the trend of the trade is towards finer cloth, the usual amount of orders will be taken. These mills are covered on yarn in 2/40s to 2/50s, and they state

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
216 Church St., New York.
206 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mill's, Oneida Co., - N. Y.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
For All Purposes.
122 & 124 Chestnut St., PHILADELPHIA. 185 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. WARPS

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN & CO.,
54-56 Franklin St., N. Y. City.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. **CAMDEN, N. J.**

Albert Herbst & Co.,

EMERALD WORSTED MILLS,

East Allegheny Avenue,
Emerald and Wishart Sts.,
PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

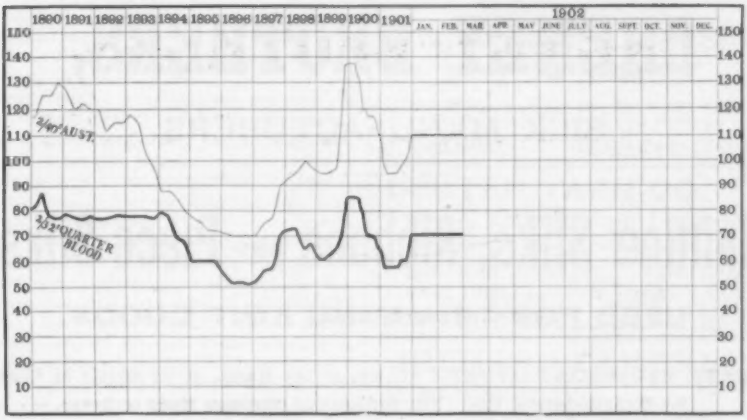

CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

that 2/50s to 2/60s are at the importing point, while 2/40s yarn is very near it; they claim that the spinners run the price of yarn to within one or two cents of importing price before there is any decline in price.

1/50s to 1/60s yarn is also being imported; cross bred yarns in low counts are being imported. The spinners, however, feel secure in their position and the slow-up is more apparent than real, because the orders were placed in November and December on speculation, and spinners are all running on these orders. Some of these orders were placed with deliveries specified; many orders were placed without spinning instructions, and it is the latter class of orders which is bothering the spinners; weavers are not in a position to turn these orders down, as they know that later they will be able to take care of all orders placed for yarn. The weavers are trying to get orders so as to take all the yarn ordered.

The buyers are at their old tactics of waiting just as long as possible without placing orders in quantity and then placing large orders with the expectation of

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

MOHAIR
PLUSH AND BRAID YARNS
QUEENSBURY MILLS,
WORCESTER, MASS.
CAMELS HAIR, LUSTRE, COLORED MIXTURES,
AND LOOP YARNS FOR DRESS GOODS.
FLYER SPUN and SINGLE WEAVING YARNS
H. HODGSON, PRES. and TREAS FRED HODGSON, SUPT.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

F. C. BARTON,

Manufacturer of

Narrow Fabrics, Ribbons, Tapes and Bindings

FOR THE MANUFACTURING TRADE.

Telephone, 2520 Franklin. **54-56 Franklin St., NEW YORK.**

FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

immediate delivery, forcing weavers to rush the orders through their mills, and making them produce six months' production in two months.

These tactics are injurious not only to the manufacturing industry, but also to the buyers themselves; by it manufacturers produce inferior cloth through rushing, and it misleads them, inasmuch as they cover for material through fear of an unusual rise. The advance comes, then follows a period of stagnation and a reaction. The buyers are injured because the manufacturer cannot fill his orders and sales are lost. Last summer when the hot weather was on us, clothiers could not get suits enough to fill requirements, and it was all brought about by commission houses and jobbers and buyers of all kinds delaying orders.

The last season has been but a fair one with the weavers and a poor season with the knitters. The weavers and spinners had a large business during its close, but a very slow business at its beginning.

The present season is acting in like manner. The end will be the same. Meanwhile spinners are running and pressing weavers for spinning instructions. This may change any time and the weavers will be pressing spinners for deliveries.

The piece dye orders are on the whole fairly well placed, as in staple fabrics the question of style is eliminated. The fancy business is very slow. Many sample piece orders have been placed, and salesmen for clothiers are out trying to sell. Whatever orders are given for suits will be placed by clothiers with the manufacturers from whom the sample piece was purchased. If the manufacturer is sold up, the clothier will have the cloth produced elsewhere; this failing, the line will be withdrawn. This is a bad way of doing business, but it is the one in vogue today, and is why the markets are quiet.

The spinners of French yarn are largely sold up to weavers, and the knitters requiring French spun yarns are finding it difficult to secure sufficient quantities. This will become more intensified as the season progresses as already hosiery manufacturers are finding it difficult to secure yarn to fill actual requirements. The top makers are very busy with orders which will carry them well into next May or June. Prices for yarn are well maintained with a slight tendency to make concessions where spinners have machinery space.

We quote as follows:

2/40s Australian	1.10	to 1.12½
2/40s XX Delaine	1.02½	to 1.05
2/40s Half Blood	.95	to 1.00

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO
YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

JAMES SPEED,
WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

J. BROADBENT & SONS,
WOOL SPUN YARNS.
YARNS FOR FLEECED LINED, and general Knit Goods our specialties. Equipment first-class. Prices low. Custom work of any kind. Get our figures.
UNIONVILLE, CONN.

FOR SALE.

COTTON WASTE,
Card Strips, Oily Card, Peeler, Sea Island and Egyptian Comber.

MANUFACTURER OF

Wool and Cotton Mixed Shoddies,
Camel Hair, Natural and White.

BUYERS of all kinds of hosiery and woolen and cotton Mill Wastes.

Chas. W. Becker, Agent, Amsterdam, N. Y.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.

Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF
SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.
CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.
RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. Drop us a line and we will call.
H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

2/20s	Half Blood	.82 to	.87½
2/36s	¾ Blood	.75	
2/26s	¼ Blood	.70 to	.72

Woolen Yarn.

Spinners continue busy with orders from the hosiery, rubber boot and weaving trade. The spinners are better employed today than was the case last year, as at the beginning of last year for three months the spinning mills were slack.

This year spinners are obliged to turn away new business, being able to take care of old customers only, and many are the manoeuvres to fill all orders received and waiting.

The French flannel business is on, and spinners are getting some good orders for yarn from this source. The hosiery manufacturers are having a good demand for woolen and merino hosiery and are using yarn two months ahead of the usual time. If the shortage of worsted yarn continues, much more woolen yarn will be used by hosiery manufacturers. The coming season will certainly be a prosperous one for the woolen yarn spinner.

The overcoating manufacturers have been having much yarn made outside their regular mills, and the shortage of overcoats was so great that during cold weather the cloth was no sooner off the looms than it was immediately manufactured into coats. The weavers of this class of work are striving to fill requirements for immediate delivery at the present time.

The cloaking trade is calling for astrachan cloth with fleece lined backs. The knitters throughout the Mohawk Valley are running slowly, and orders are backward. Some orders are coming forward, but there is no snap to business. There will be more flat underwear sold the coming season than has heretofore been the case.

Many knitters are installing garnet machines and much thread waste will be imported and sold: this stock ranges between 55 to 62 cents, as against lamb's wool 68 to 72 cents per pound, and, while knitters use lamb's wool, they find it possible and profitable to use a percentage of garnetted thread waste. Noils are in good demand and carbonized noils are beginning to be imported. These noils range from 60 to 72 cents per pound.

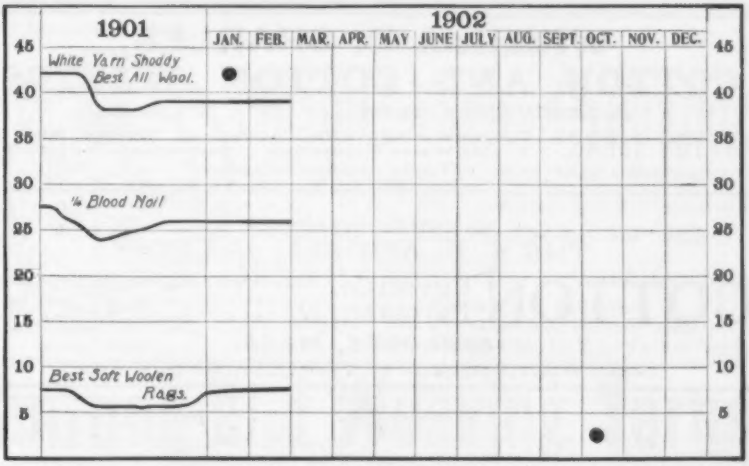

CHART SHOWING RANGE OF PRICES Of SHODDY, RAGS AND NOIL.

Shoddy Market.

There has been a fair demand for shoddies and extracts during the past month which has continued up to the present writing. Extracts are most notably affected in the present movement, the general demand being for fine and medium stocks of all grades. Blacks seem to have been receiving particular attention of late. Whites and lights are not so lively, but even the small demand for these stocks has been extremely difficult to fill owing to their scarcity. There is also considerable call for new black worsteds, which are, however, owing to peculiar trade conditions not at all plentiful. There is no indication today of any let-up in the volume of business transacted and everything seems to point toward a prosperous season.

NOILS AND WOOL WASTE.

Our quotations for the past two months have scarcely been changed. The market remains in about the same condition, though there are indications of a slightly stronger tone. No signs of softening have been patent during the month just past. The keynote of the general situation lies in the fact that wool and wastes show a tendency to be sustained at present values or higher.

Cotton wastes are still quiet, quotations of today remaining about the same as those of a month ago.

RAG MARKET.

The rag market is still in a very prosperous condition and dealers have nothing to complain of in the way of business during the month just past. They have found themselves in the position to reject good offers and have done so without let or hindrance. The demand in new clips has been along the line of the finer grades. Black worsteds, blue worsteds, choice lights have been in excellent request. Softs and knit stock have also had more or less call.

As in shoddies, indications point to a large volume of business during the present season.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	25-28
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	26-28
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20
Merino.	
Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, No. 1	17-18
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	17-19
Medium light	15-17
Regular gray	12-13
Black	14-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11
Medium dark	6½-7½
Worsteds.	

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES.
AMSTERDAM, N. Y., U.S.A.

COTTON YARNS. Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited.
Shepperdson's Code, 1878. Cable Address "Charles."

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.

COTTON Egyptian, Peruvian, American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Blue	15½-16½
Black	20-22
Serges.	
New blue	15-16
New black	15-16
Flannels.	
New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	6½-7
Old white flannels	17-18
White flannels, No. 2	11-12
Old red flannels	9-10
Light blue flannels	7½-8
Old blue flannels	6-7
Old plaids	5-7
White stockings	17-18
White hood stock	21-22
Clear hoods	7-8
Red stockings	7-8
Blue stockings	7-9
Fancy stockings, No. 1	7-9
Gray stockings	8-9
Black stockings	9½-11
Knit stock comforters	7½-8½
Red knit	9-10
Light gray knit	8-9
New light fancies	15-16
New fancies	11-12

Merinos.

Light, fine	14-15
Light, coarse	7-8
Fine dark	9-10½
Dark, No. 2	5-6½
Coarse dark	4½-5
Blue	10-11
Blue—seamed	14-15
Black—unseamed	10-11
New black	18-20
Small	3-3½
Bunting	6-8

NOILS.

Australian	48-55
Fine domestic	40-45
½ Blood	35-40
⅜ Blood	29-32
¼ Blood	25-27
Braid	22-25
Carpet (white)	14-18
Carpet (colored)	10-12½

Seedy.

½ Blood	25-30
⅜ Blood	20-25
¼ Blood	17-22

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7½-8
Fine dark, all wool	6-6½
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	7
No. 1 Machine	4½-5
No. 2 Machine	4½-4¾
Machine Cop	5-5½
No. 1 Cop	4½-5
No. 1 Card	6-6¼
No. 2 Card	3-3½
No. 1 Oily Card	2½-3
No. 2 Oily Card	1-3½
Egyptian Card	6¾
Peeler Combing	7-7½
Egyptian Combing	7-7½
No. 1 Linters	3½-4½
No. 2 Linters	3-3½
White Clips	4-5
Colored Clips	2-2½
No. 1 Picker	1¾-2½

Sale of Looms Nearly 2000 Years Ago.

The document was drawn up in the year 54 A. D., and seems to be the record of a sale of a loom, together with the acknowledgment of receipt of price of same. Those who are familiar with the form such a document would take today may find it a matter of interest to compare the same with the wording of this ancient document. Here is the paper in question:

"Ammonius, son of Ammonius, to Tryphon, son of Dionysis, Greeting. I agree that I sold to you the weaver's loom belonging to me, measuring three weavers' cubits less two palms, and containing two rollers and two beams; and I acknowledge the receipt from you through the Bank of Sarapion, son of Lochus, near the serapeum of Oxyrhynchus, son of Lochus, of the price of it agreed between us, namely 20 silver drachme of the Imperial and Ptolemaic coinage; and that I will guarantee to you the sale with every guarantee, under penalty of payment to you of the price which I have received from you, increased by half its amount and by damages, this note of hand is valid."—Canadian Journal of Fabrics.

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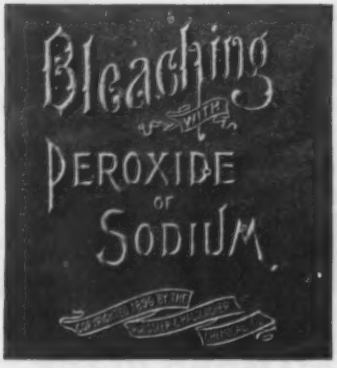

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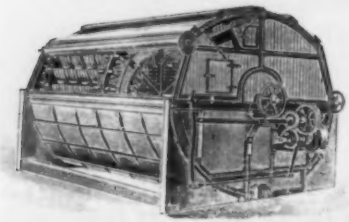

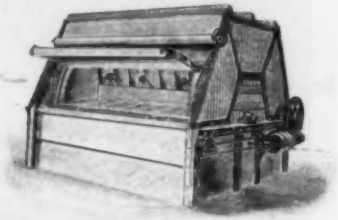

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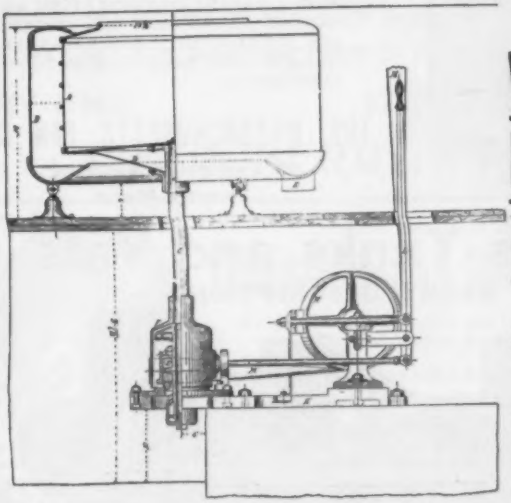

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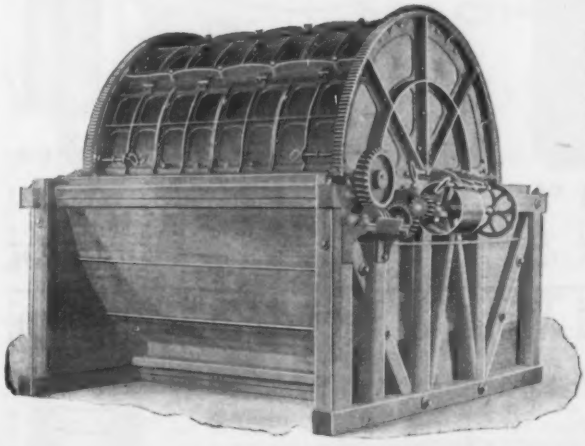

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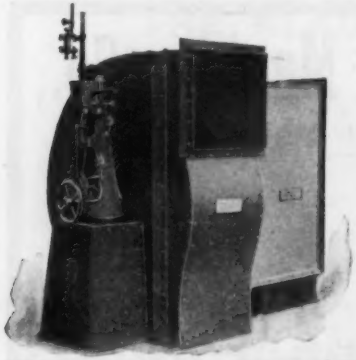

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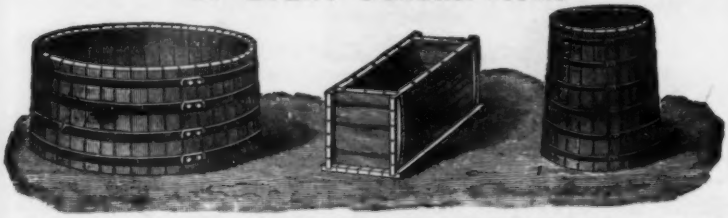

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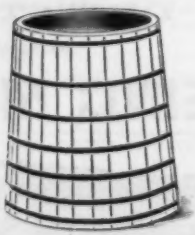

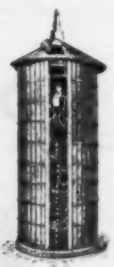

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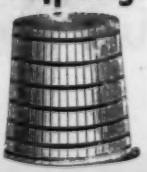

Fans in March

When stormy March with piercing winds
Doth vex and trouble all your minds,
Try Berry Wheels for steam or drying
And see how soon your cares go flying.

TRY ONE. **IT PAYS.**

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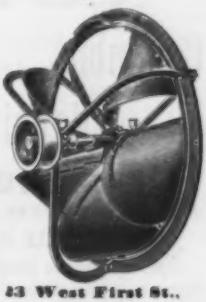

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Our system of Ventilating and Drying by air circulation will improve quality and increase production.

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Printer of Cotton, Woolen, Silk and Worsted Yarns and Warps for Woven and Knit Goods. Bleaching of Cotton and Woolen Yarns a Specialty. **134 to 150 North 22d St., Philadelphia, Pa.**

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No. 9 Portable Foot Power.

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Combining the latest American, French and English improvements.

Send for prices.

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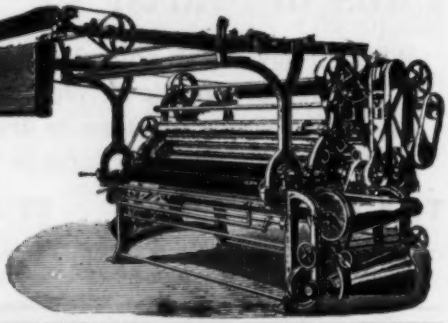

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Cloth Finishing Machinery

FOR COTTON, WOOLEN, WORSTED, PLUSH GOODS, ETC.

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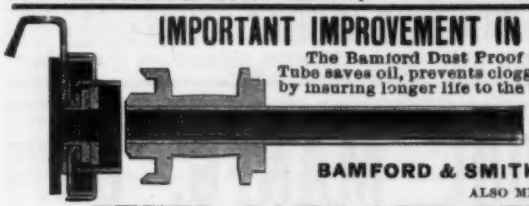

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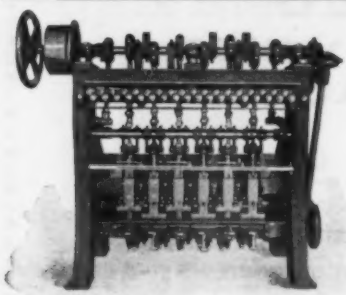
CAPS, FLYERS, TUBES, Etc., REPAIRED.



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Multiple Needle Sewing Machines

For Sewing Carpet Linings, Horse Blankets, Wadding, etc.

These machines can be built with any required number of needles.

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Sole Makers of the TORRANCE PATENT

Self-Acting Balling Machine

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WITH LOW DOWN FEED.

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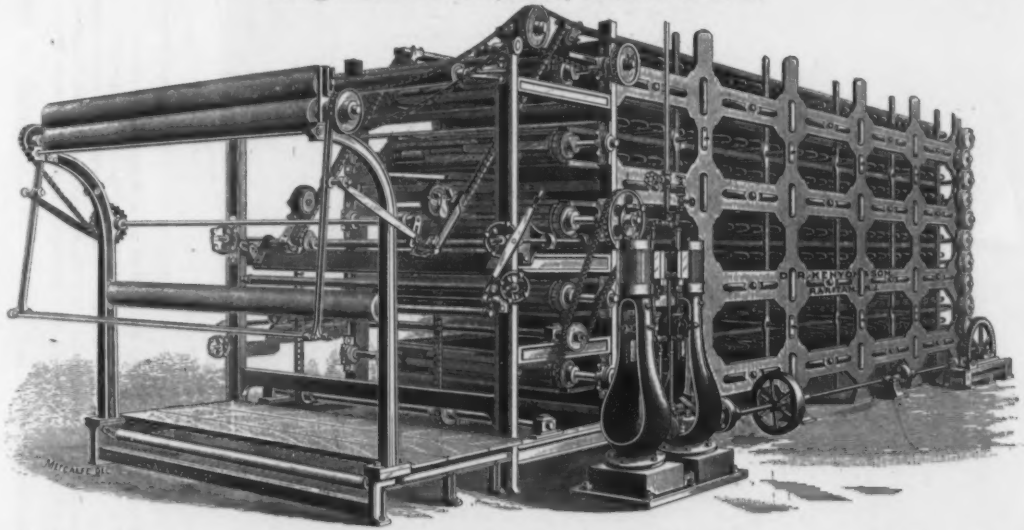

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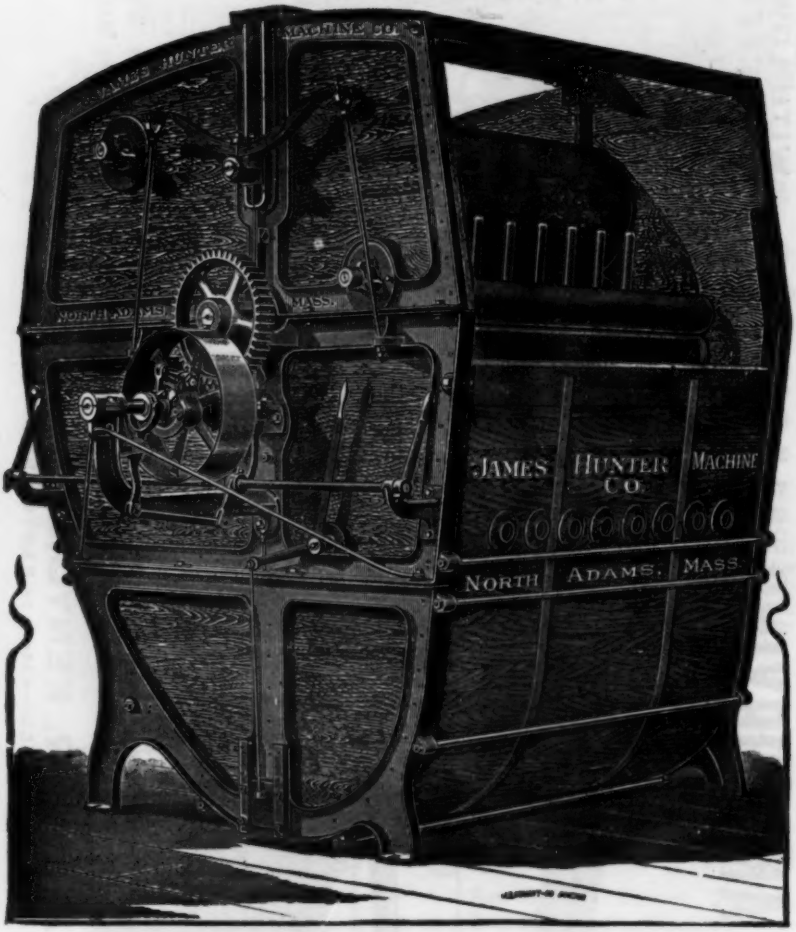
For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

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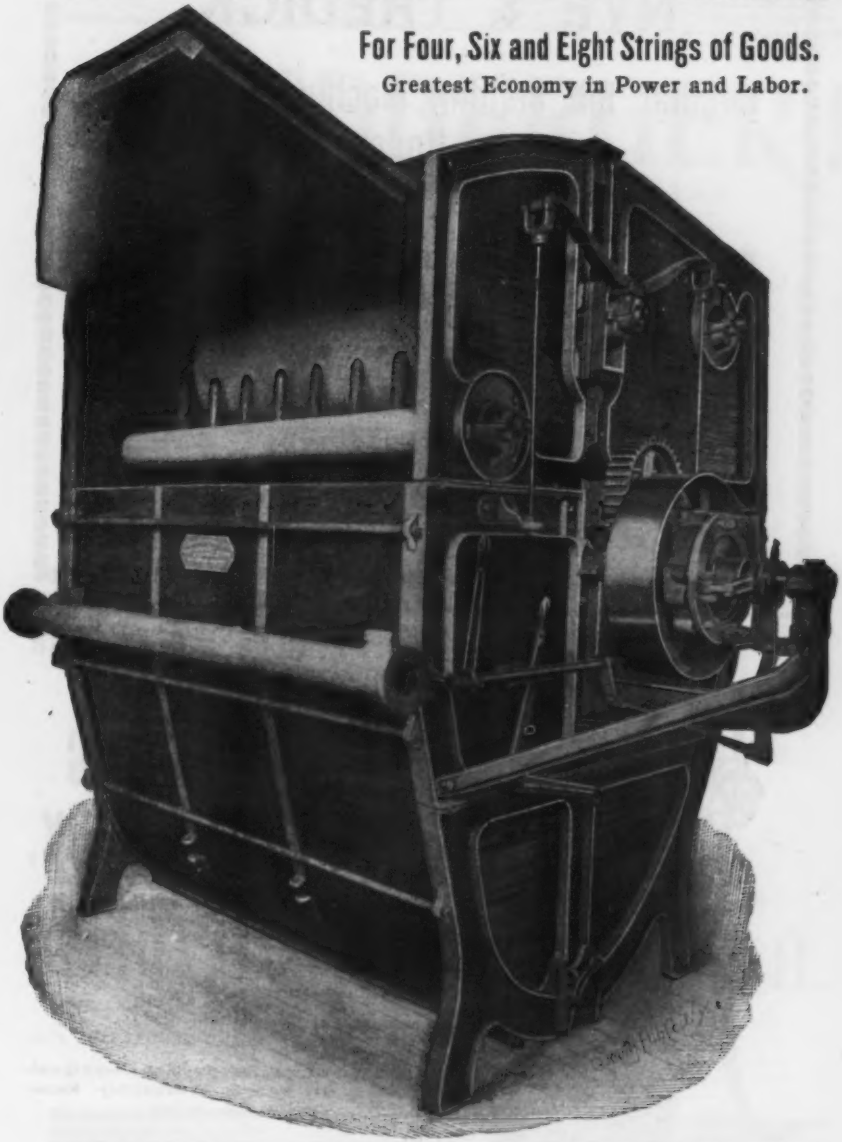
For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

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For Ladies' Vests, Combination Suits, Corset Covers, etc.
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Machines for Rib Hosiery, Rib Tops and Cuffs.

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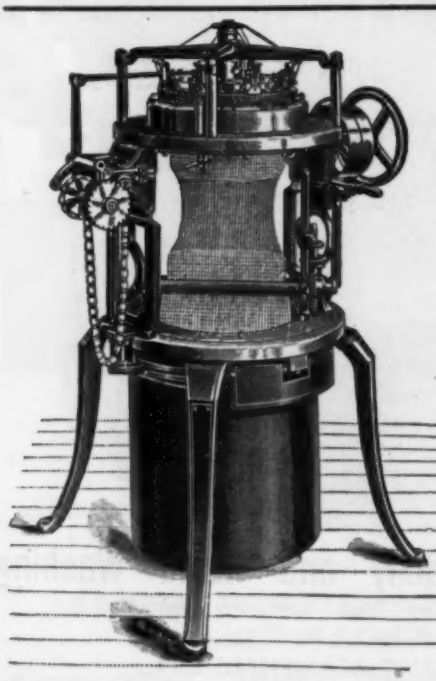

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For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

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EDGINGS.

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All goods sold direct.

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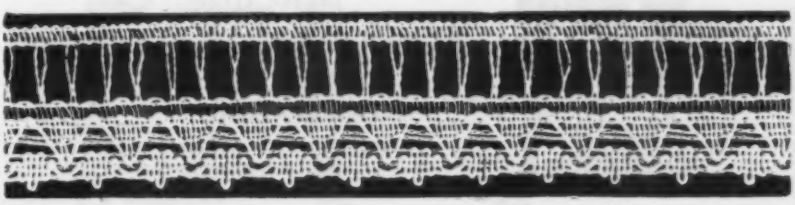

THE INVINCIBLE, "C,"
FULL AUTOMATIC KNITTING MACHINE

For SEAMLESS Hosiery

A BIG PRODUCER.

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PRACTICAL AND ECONOMICAL IN OPERATION.

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NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

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A MACHINE OF THE HIGHEST GRADE.

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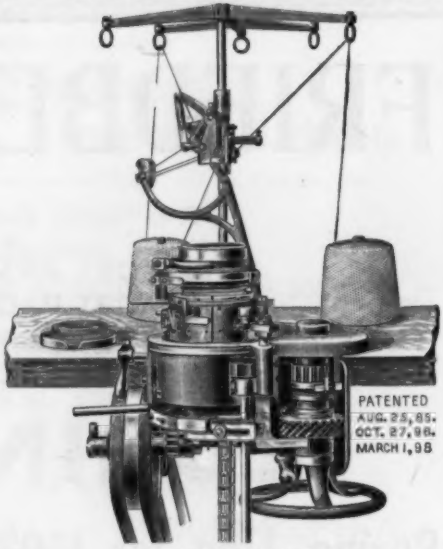

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THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine. Reinforcing Thread Automatically Inserted. Thoroughly Interchangeable in all its parts.

More simply constructed than any Machine on the market.

Automatic Two-color Striping Attachment, also, Black-Leg White-Foot Attachment.

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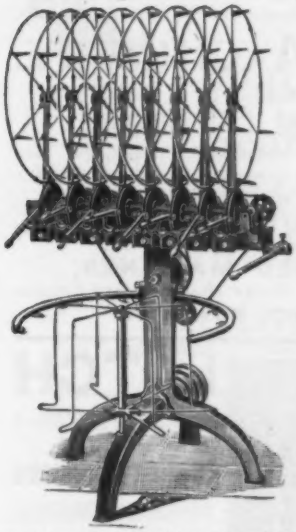
JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

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Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

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Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear, Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink, —in short, write us if you are in need of anything, or if you have any Machines for sale.

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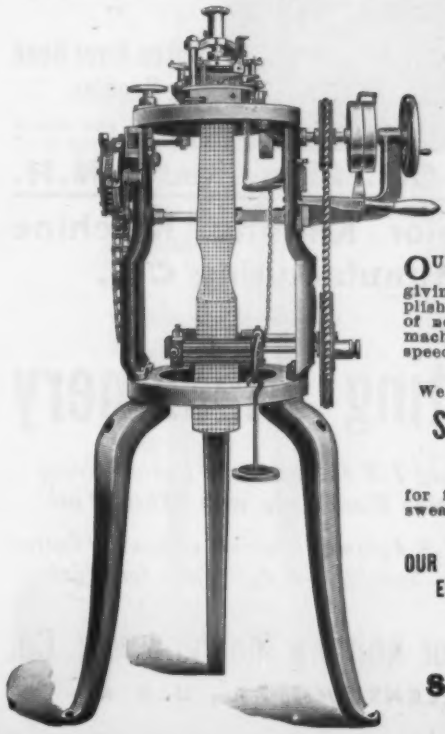

HIGH SPEED RIB KNITTING MACHINERY.

OUR latest model machinery has been designed to run at **very high speed** giving large production. This is accomplished with fewer seconds, less breakage of needless, less jar and wear and tear on machines than has been customary at lower speeds.

We also make special...

STRIPING AND DESIGNING MACHINES

for fancy golf stockings, bathing suits, sweaters, toques, toboggan caps, skirts, etc.

OUR MACHINERY ENABLES MANUFACTURERS TO "LEAD THE PROCESSION" INSTEAD OF STUMBLING ALONG WITH THE CROWD.

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Successors to PEPPER MANUFACTURING CO.

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INCLUDING

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ALL KINDS OF

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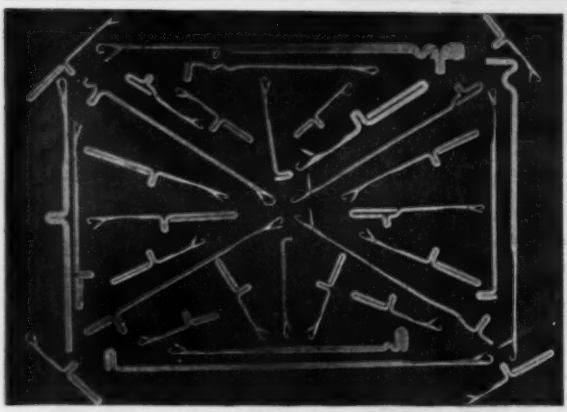
For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



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Needles for all

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OUR

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Sunken Rivet Head Needles

will save you money every day in the year.

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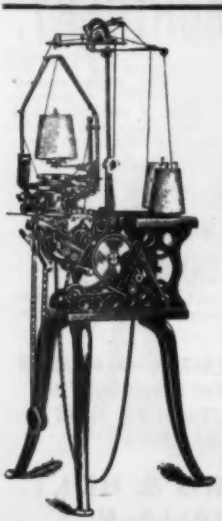

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Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

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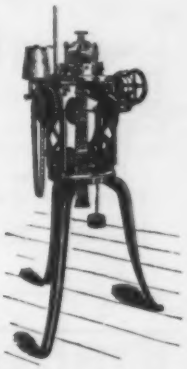

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GAS ENGINES for city or country.
BRUSHING MACHINERY
KNITTING MACHINERY

EFFICIENT
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PATENTED JANUARY 7, 1890
The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.
Blocks for Printing Hosiery.
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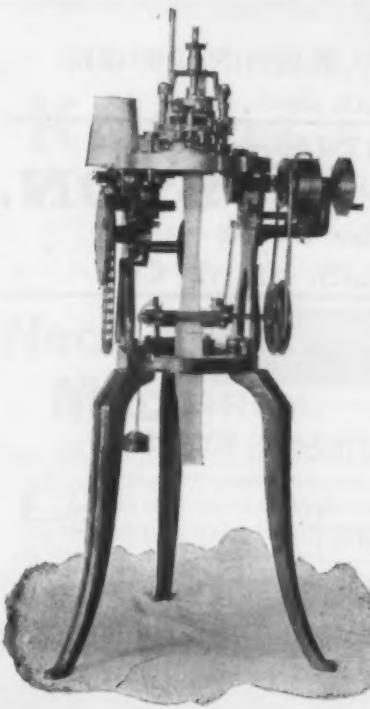

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For All Kinds of

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Entire New Design Ribber.
Protected by Patents
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Absolute Guarantee With Each Machine.

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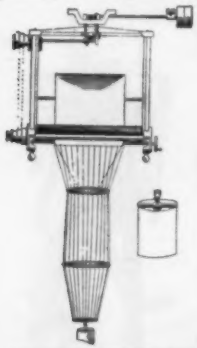

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Others follow but they cannot keep up with our

Improved Vertical Dryers

for Tubular Goods. Such is the verdict of superintendents of the newest and most up to date mills. Can you afford to use any but the most economical these times.

Sole Owner and Manufacturer

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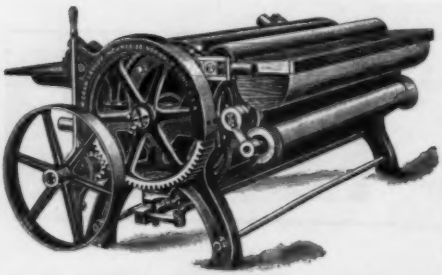
AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

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3-4 Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

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The Power Neck Marking Machines made by Thos. Kennedy, Cohoes, N. Y., are the original machines for this purpose and are thoroughly covered by Patents.

Do not use machines of a character that infringe on our patents.

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Our New Improved Light-Running Short Carriage

KNITTING MACHINE

unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments. Made with 2 complete yarn carriers and 2 color striping attachment and has the new combined Sweater Stitch. Drop Lock and Tubular Lock. Special Glove Machines. Finger Knitting Machines 3 inches width of needle bed. Rapid 2-thread Lock stitch Overseamers.

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TRADE MARK.

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Business est. in 1859.

WILLCOX & GIBBS

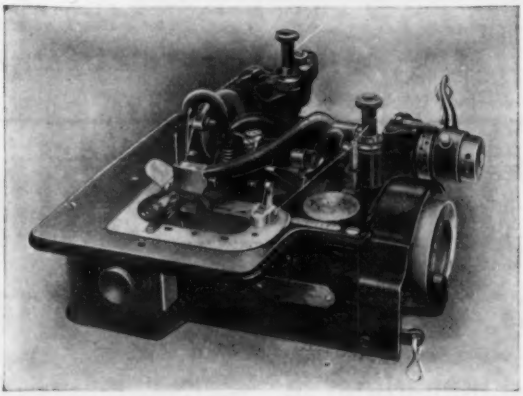
"OVERLOCK" MACHINE.

(TRADE MARK.) (Pat. Apr. 5, 1892.)
(Patent twice upheld by U. S. Court of Appeals.)

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH



The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

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... Manufacturers of the ...
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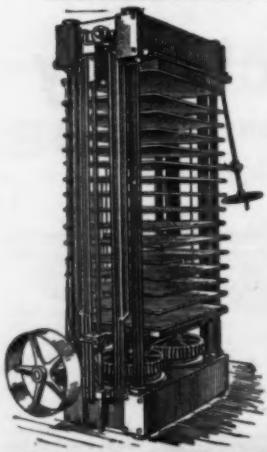

Hot Plate Screw Press for Hosiery Trade.
Write for Prices and Particulars.
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Sizings and Finishing Pastes
FOR YARNS AND CLOTHS.
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THE CRAWFORD
HOLLOW STEAM
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For Knit or Woolen Goods.
The most reliable machine of the kind on the market.
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Successors to
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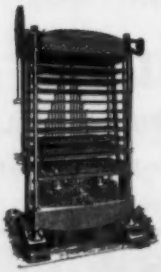

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Manufacturers of
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for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers, Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

LACINGS For Overshirts and Underwear.
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THE CHEAPEST AND BEST METHOD

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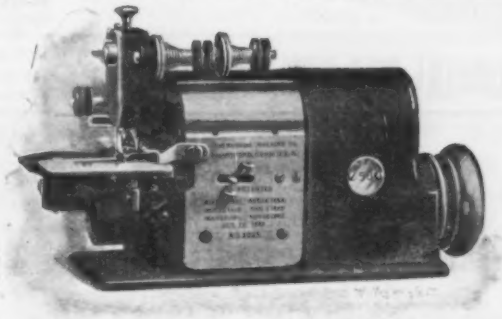

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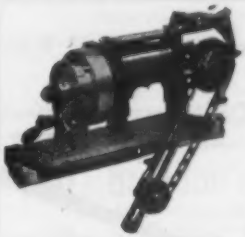

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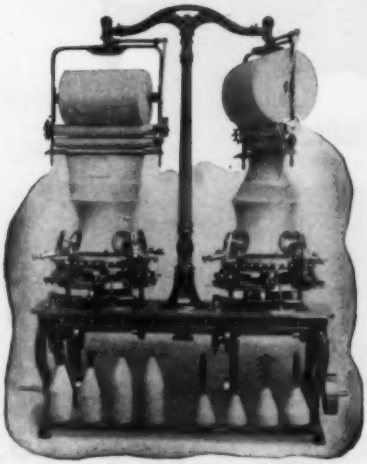

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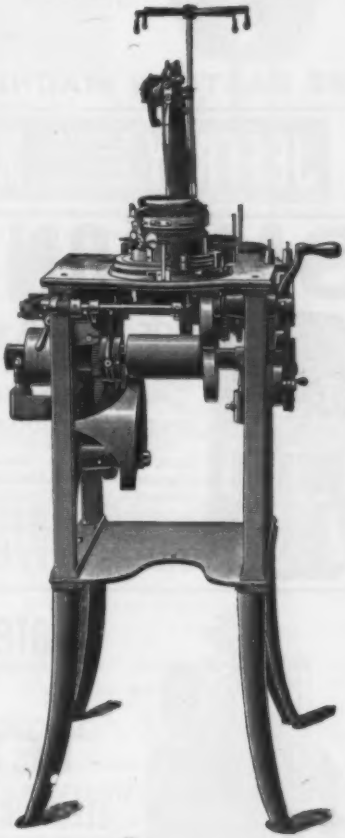

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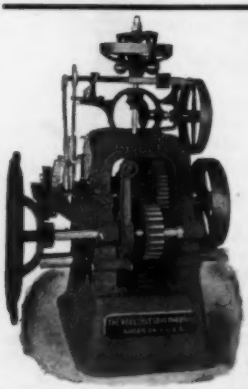

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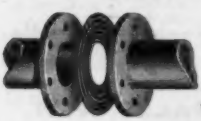

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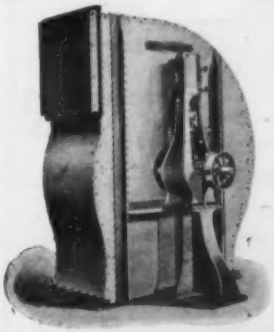

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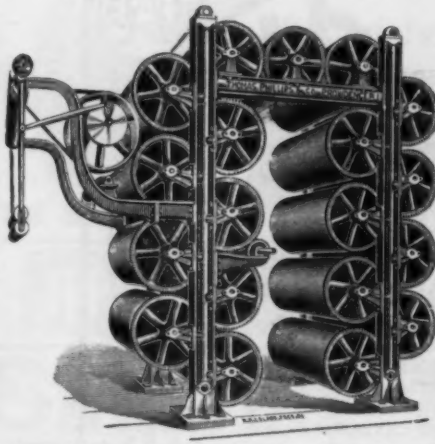

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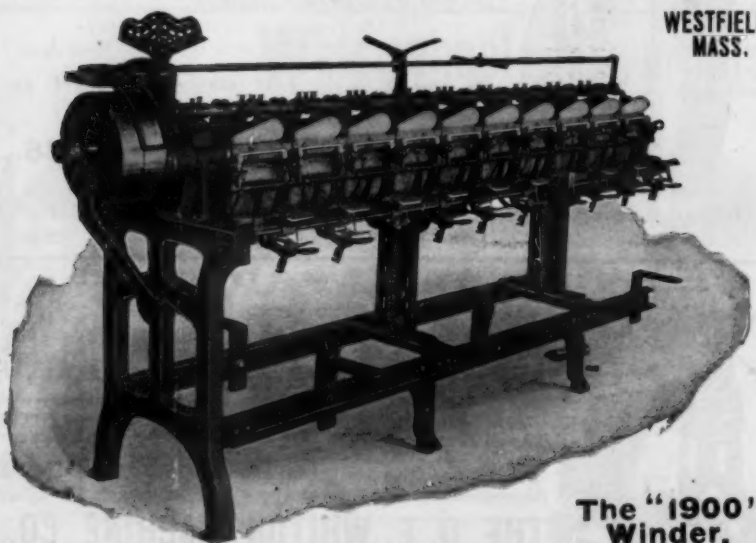

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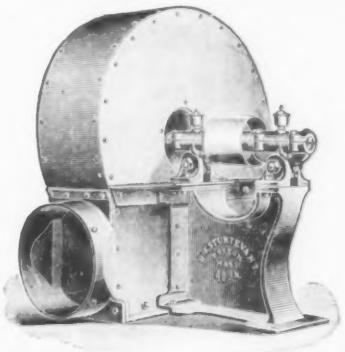

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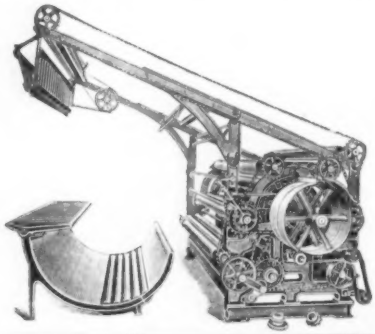

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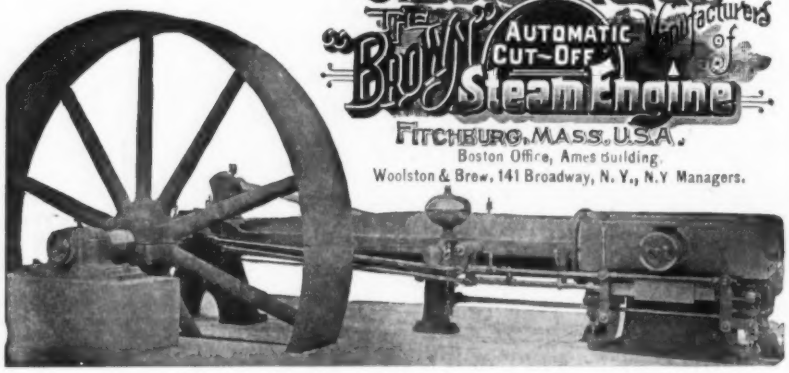
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